

Understanding the “Job-Loss Recovery”

This Public Policy Brief presents analysis of the labor market by economic research staff at the Federal Reserve Bank of Boston. It is based on materials originally presented to the Board of Directors of the Boston Fed on April 8, 2004, with selective updates incorporating data reported in early June. Contributors to this brief include David DeRemer, Jeffrey C. Fuhrer, Kristina Johnson, Jane Sneddon Little, Radoslav Raykov, Scott Schuh, Geoffrey M.B. Tootell, Robert Triest, and Anne van Grondelle. Views expressed in this brief do not necessarily reflect the views of the Federal Reserve System.

The brief comprises three complementary but standalone sections. Section I describes the unusual characteristics of the current recovery to date, explains why it has been termed the “job-loss recovery,” and analyzes the magnitude of the “employment gap” and the rate at which employment must grow to close the gap by the start of 2006. Section II addresses outsourcing, which some have blamed for the job malaise. Section III explores the role of productivity and costs as possible explanations for sluggish employment growth.

Section I. How Big Is the Employment Gap?	p. 2
Charts and boxes for Section I follow page 10.	
Section II. Outsourcing	p. 15
Charts and boxes for Section II follow page 22.	
Section III. Productivity and Costs	p. 29
Charts and boxes for Section III follow page 43.	

I. How Big Is the Employment Gap?

An Unusual Economic Recovery

The recovery from the 2001 recession has been very unusual. The typical pattern of aggregate employment change over the business cycle is for employment to decrease during a recession, but then to recover fairly rapidly during the subsequent recovery. On average, non-farm payroll employment fell 2.8 percent during the eight post-World War II recessions preceding the 1990-1991 recession, but it took only 10 months on average to regain the jobs lost during the recession. The recovery from the 1990-1991 recession was an exception to the traditional pattern. Although non-farm payroll employment dropped only 1.1 percent during the downturn,¹ employment stagnated following the end of the recession. It took 23 months before the pre-recession level of employment was regained. In the meantime, many commentators declared that the economy was in a “jobless recovery.”

Employment growth during the current expansion has been even more anemic than it was during the recovery from the previous recession. In August 2003, 20 months following the latest recession’s end, non-farm payroll employment was nearly a million jobs below the level reached at the end of the recession and represented roughly 2.7 million fewer jobs than the pre-recession peak level of employment. So, the “job-loss recovery” became the successor to the “jobless recovery.” Although there has been healthy employment growth over the last three months, non-farm payroll employment is still – as reported in early June – roughly 1.3 million jobs below the pre-recession peak level, despite the fact that the recession ended two-and-a-half years ago.

This public policy brief analyses the magnitude of the “employment gap,” and the rate at which employment must grow in order to close the gap by the beginning of 2006.

¹ Measured as the percentage change from peak to trough employment levels, using establishment survey data.

Alternative Measures of Employment

There has been some controversy recently regarding whether the most commonly used data for employment growth might be underestimating the extent of job gains during the current economic expansion. Chart 1 plots three alternative measures of employment over the past 10 years. The red line shows non-farm payroll employment. This is the most commonly cited employment data series; it is derived from the Bureau of Labor Statistics' (BLS) Current Employment Statistics (CES) program, often referred to as the "establishment survey." The CES employment estimates are based on a monthly survey of the payroll records of over 300,000 business establishments. The blue line shows estimates of civilian employment based on the BLS Current Population Survey (CPS), a monthly survey of roughly 60,000 households, often referred to as the "household survey." Both employment series convey the same general message of a slow recovery from the recession (shown as the shaded area), but the household survey provides a somewhat rosier view of the post-recession period.

In addition to differences between the two data series in the trends of employment, there are differences in the levels of estimated employment at each point in time. Civilian employment measured by the household survey is greater than non-farm payroll employment estimated by the establishment survey for the simple reason that the two series measure somewhat different concepts of employment. The household survey's measure of civilian employment is intended to count the number of people, aged 16 and over, who are engaged in civilian work, including the self-employed, farm workers, and private household workers. In contrast, the establishment survey estimates the number of jobs, rather than the number of people employed, at private non-farm business establishments. It excludes agricultural workers, the self-employed, and other non-payroll workers measured by the household survey, but it double counts people who are employed in two payroll jobs.

The green line shows household survey employment estimates that have been adjusted to make them comparable to the non-farm payroll employment estimates from

the establishment survey.² The adjusted household survey estimates track the establishment survey estimates fairly closely through 1997, but then start to diverge – first showing less of an employment boom in the late 1990s and then less of a decline during the recession than shown by the establishment survey.

The household survey is designed primarily to measure the rate of unemployment rather than the level of employment, and its employment estimates are subject to greater sampling variation than are those based on the establishment survey. This is reflected in Chart 2, which shows the month-to-month changes in employment measured by the two surveys. The household survey's estimates are much more variable than those of the establishment survey; this very likely reflects a higher sampling error variance resulting from the household survey's smaller sample size and design geared toward measuring the unemployment rate. There are substantial differences between the mean level of monthly employment change estimated by the two surveys (as shown by the two bars on the right side of the chart), but the differences in the mean level of employment change are swamped by the large differences between the two surveys in the estimated employment change in almost any given month.

In summary, estimates from the household and establishment surveys both suggest that employment has been much slower to recover from the 2001 recession than is typically the case in economic expansions. For technical reasons associated with sample survey design, the establishment survey is a more reliable gauge of changes in employment.

² The BLS explains the adjustments to the household series as follows:

"This series represents not seasonally adjusted household survey employment that has been revised from January 1990-December 2003 to smooth out the effects of population control revisions introduced in January 2000, 2003, and 2004. The data from 1994 forward were then adjusted to an employment concept more similar to the payroll survey by subtracting from total employment "agriculture and related employment", "the self-employed", "unpaid family workers", "paid private household workers", and "workers on unpaid absences" and then adding nonagricultural wage and salary multiple jobholders. The resulting employment series was then seasonally adjusted." –Source: "BLS Household and Payroll Surveys: Summary of Recent Trends," p. 13, available at http://www.bls.gov/cps_trends.pdf

How Big Is the Employment Gap?

It is clear that the stagnation of employment during the expansion following the 2001 recession has resulted in a gap between the current level of employment and any reasonable measure of “full employment,” but how big is the gap? In discussing this question, it is useful to consider recent changes in the unemployment rate and the labor force participation rate, shown in Chart 3. For implicit in the concept of “full employment” are the concepts of normal, or equilibrium, levels of the unemployment rate and labor force participation rate.

The unemployment rate increased from 3.9 percent in December 2000, prior to the recession, to 5.6 percent in the last month of the recession and then continued to increase to 6.3 percent in June 2003 before decreasing to its current (May 2004) level of 5.6 percent. It is not unusual for the unemployment rate to continue to increase past the official end of a recession, but generally the rate would have fallen closer to its pre-recession value by this point in the expansion. A complicating factor is the very low value of the pre-recession unemployment rate. If, as many economists would argue, this value is lower than the unemployment rate associated with a stable inflation rate (the NAIRU, or non-accelerating inflation rate of unemployment), then one would neither expect nor desire the unemployment rate to fall all the way to its pre-recession level.

The labor force participation rate decreased from 67.1 percent in February 2001, just before the start of the recession, to 66.7 percent at the end of the recession. Since that time, it has continued to fall and is now (May 2004) 65.9 percent. The sustained drop in the labor force participation rate is unusual – generally the participation rate exhibits only mild fluctuations over the business cycle.

A range of estimates of the gap between “full employment” and the April 2004 level of employment is shown in Chart 4. The baseline estimate, 5.2 million jobs, is based on an assumed value of 5.0 percent for the unemployment rate associated with a stable inflation rate (NAIRU) and an assumed value of 66.8 percent for the labor force participation rate. As explained below, the “low estimate” (3.5 million jobs) and “high

estimate" (6.9 million jobs) of the employment gap are based on different, but reasonable, values of the NAIRU and normal labor force participation rate.

It is difficult to estimate econometrically a precise value of the NAIRU, and so economists vary in their preferred estimates. For this reason, we assume a higher value for the NAIRU, 5.5 percent, in our "low estimate" of the job gap, and a lower value, 4.5 percent, in our "high estimate" of the job gap. There is also disagreement about the normal, or equilibrium, labor force participation rate. We chose our baseline value of the rate, 66.8 percent, by holding the age and gender specific labor force participation rates constant at their values in 1998 (when the average value of the monthly aggregate labor force participation rates was 67.1 percent, as it was in 1997-2000), but allowing for the effects of changes in the age and gender composition of the adult population. One would expect the movement of the oldest baby boomers into the age range associated with early retirement to pull down the aggregate labor force participation rate, and this is reflected in our baseline value being lower than the average value of the aggregate labor force participation rate in the late 1990s. Surprisingly, however, there has recently been some upward movement in the labor force participation rates of people in their late 50s and early 60s (which some researchers have attributed to changes in pension plans), and so holding the age specific participation rates constant may not be appropriate. For this reason, we assume a higher value of the labor force participation rate, 67.3 percent, in our "high estimate" of the employment gap. On the other hand, one might argue that the labor force participation rates of the late 1990s were driven by unsustainably tight labor market conditions, and so we assume a lower rate, 66.3 percent, in our "low estimate" of the employment gap.

Estimates of the adult population, unemployment rate, and labor force participation rate all come from the household survey. In computing our estimates of "full employment," we first calculated the product of the household survey's estimate of the adult population, one minus our assumed value of the NAIRU, and our assumed value of the normal labor force participation rate. The resulting estimates of full employment are comparable to the employment estimates from the household survey.

However, as explained above, for technical reasons the establishment survey is a more reliable measure of employment and more appropriate to use in computing the employment gap. To make our full employment estimates comparable to the establishment survey employment estimates, we multiplied the full employment estimates by 0.9627, the average monthly value in both 2000 and 2001 of the ratio of establishment survey non-farm employment to civilian employment estimated from the household survey.

Recent Employment Changes in Perspective

Chart 5 compares recent changes in employment with the rate at which employment would need to grow in order to eliminate the job gap by January 2006. By that time, a little over five years will have passed since the end of the 2001 recession. Employment growth will need to average 346 thousand jobs per month between April 2004 and January 2006 in order to eliminate our baseline estimate of the employment gap (the equivalent figures for our low and high estimates of the employment gap are 262 thousand jobs and 430 thousand jobs).³ A net increase of approximately 118 thousand jobs per month is needed just to accommodate growth of the labor force. In the baseline case, about 64 thousand jobs per month are needed to return the labor force participation rate to its normal level by the start of 2006, and roughly 41 thousand jobs per month are needed to decrease the unemployment rate to the assumed NAIRU value of 5 percent. Employment growth of 124 thousand jobs would be needed to bring the ratio of establishment survey employment to household survey employment back to its average level in 2000 and 2001.

³ In calculating estimates of the January 2006 labor force, we adjusted our estimates of the equilibrium labor force participation rate downward to .666 (baseline), .671 (high estimate), and .661 (low estimate) to allow for population aging using the same methodology described above (using age-gender population projections for 2005). The ratio of the CPS estimate of the adult population in January 2004 to the Census Bureau's 2000 population projection for January 2004 is 1.0055. We used this ratio as a multiplicative adjustment factor for the Census Bureau's 2000 population projection for January 2006.

Recent estimates (from the establishment survey) of net monthly employment growth are well above the rate needed to accommodate labor force growth, but likely short of the rate needed to close the employment gap by the start of 2006. Non-farm employment grew by 346 thousand in April 2004, and 248 thousand in May; the average estimated employment growth in the first quarter of 2004 was 198 thousand. The rate of employment growth so far this year is clearly well above the rate for the post-recession period as a whole. Employment growth averaged just under 60 thousand jobs per month in the fourth quarter of 2003, and has averaged not much more than 12 thousand jobs per month over the whole expansion. So, the recent data are very encouraging, but we still have quite a way to go in closing the employment gap.

What Is Driving the Drop in Labor Force Participation?

One of the most surprising aspects of the labor market situation is the drop in the labor force participation rate. Although we do not yet have a full explanation of why labor force participation has decreased, the available evidence points to diminished labor market opportunities as the primary cause. Chart 6 shows trends in the unemployment rate and the median duration of spells of unemployment. The median duration of unemployment was high relative to the unemployment rate during much of the 1990s, and it has recently been at levels usually associated with a severe recession. To some degree, this is due to the decreased prevalence of temporary layoffs. Traditionally, cyclically sensitive manufacturing industries used temporary layoffs as a way of temporarily reducing their payrolls during slack periods. Laid-off workers would generally be unemployed for a relatively brief period before being recalled. But blue-collar manufacturing employment is a much smaller share of total employment than was previously the case, and the share of total unemployment due to temporary layoffs has also declined. Workers who are permanently terminated, rather than temporarily laid off, need to find new job matches and can be expected to endure longer spells of unemployment.

Analysis of labor force transitions in the household survey shows that the probability that an unemployed worker will regain employment in any given month has declined sharply since the onset of the recession, suggesting that unemployed workers are having a more difficult time finding new jobs. Somewhat surprisingly, the probability that an unemployed worker will leave the labor force in any given month has also decreased. However, unemployed workers are still more likely to eventually drop out of the labor force the more months they remain unemployed. Labor force participation seems to be dropping due to the increased difficulty of finding new jobs.

Job Creation and Job Destruction

Chart 7, which presents data on rates of gross job creation and gross job destruction, provides further evidence in favor of the view that depressed labor demand is the primary factor underlying the job gap. The rate of gross job creation is equal to the number of new jobs created at business establishments expanding employment during a quarter as a percent of total employment; the rate of gross job destruction is analogously defined as the decrease in employment at all business establishments with declining employment during a quarter as a percent of total employment (the rate of net employment change is the difference between the two). As expected, during the recession the rate of job destruction increased, and then it fell to a level somewhat lower than its pre-recession level during the subsequent expansion. The behavior of job creation has been more unusual. The rate of job creation began to fall well before the start of the recession and then continued to fall during the expansion.

The anemic rate of net employment growth during much of the current economic expansion has been caused by a lack of job creation, not by an unusually high rate of job destruction. The decreased rate of job creation is also very likely a prime cause of the increased duration of unemployment spells and the decrease in the labor force participation rate. Unfortunately, at this point, the job creation and job destruction data are only available through the third quarter of 2003. As more data become available, it

will be interesting to see whether the healthy net employment growth of the last three months has been due to a pick-up in the rate of job creation.

Chart 1
Measures of Civilian Employment, 1994-2004

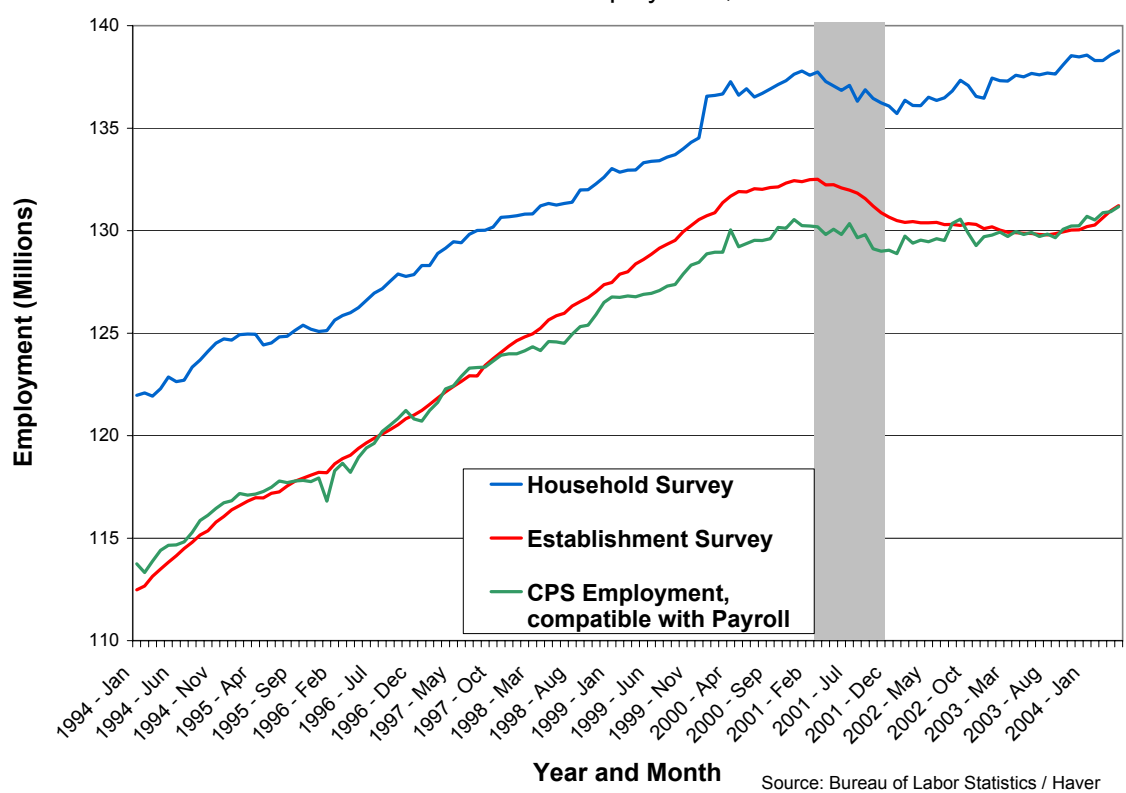


Chart 2
Employment Change and Mean Employment Change, 2001-2004

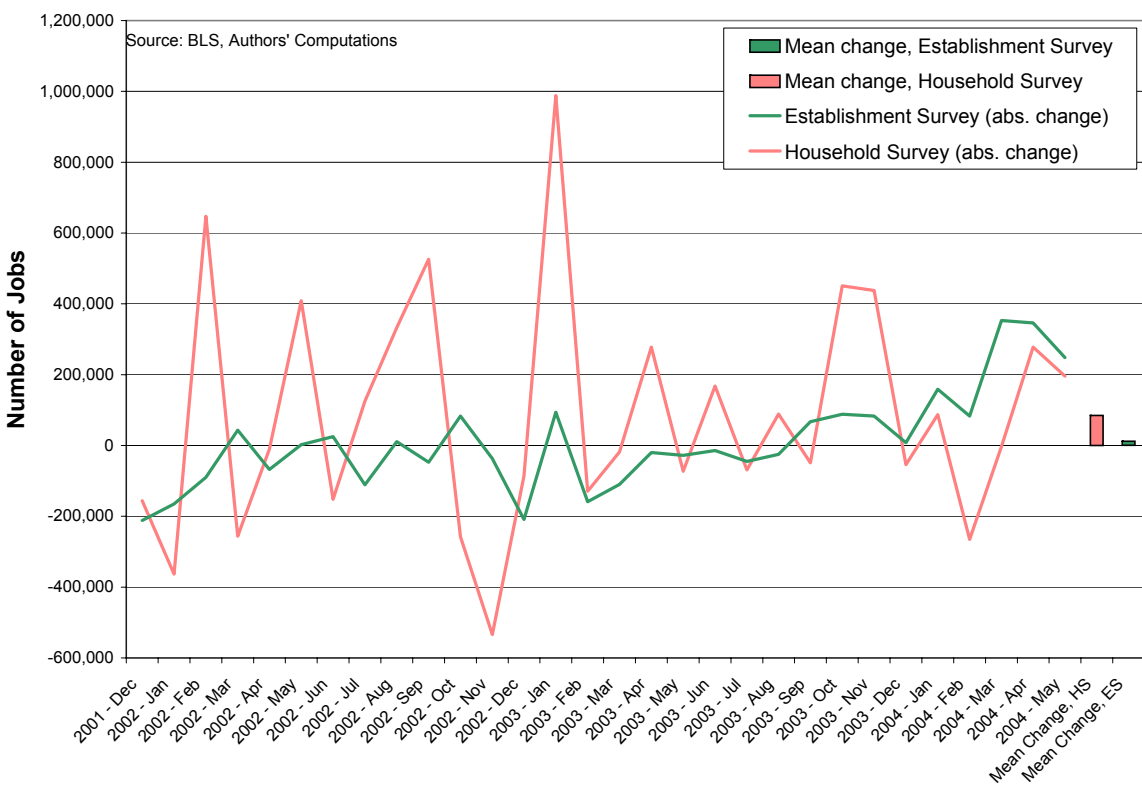


Chart 3

Unemployment Rate and Labor Force Participation, 1997-2004

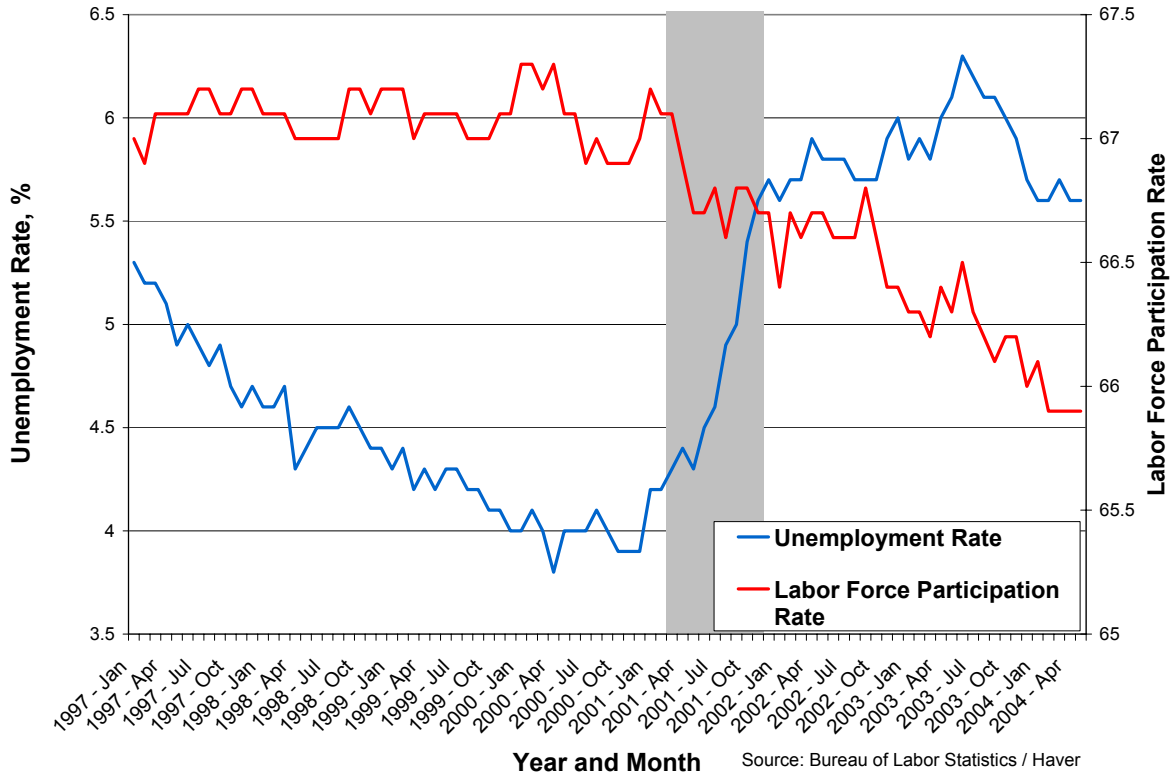


Chart 4

Estimates of the Job Gap, April 2004
(Based on the Establishment Survey)

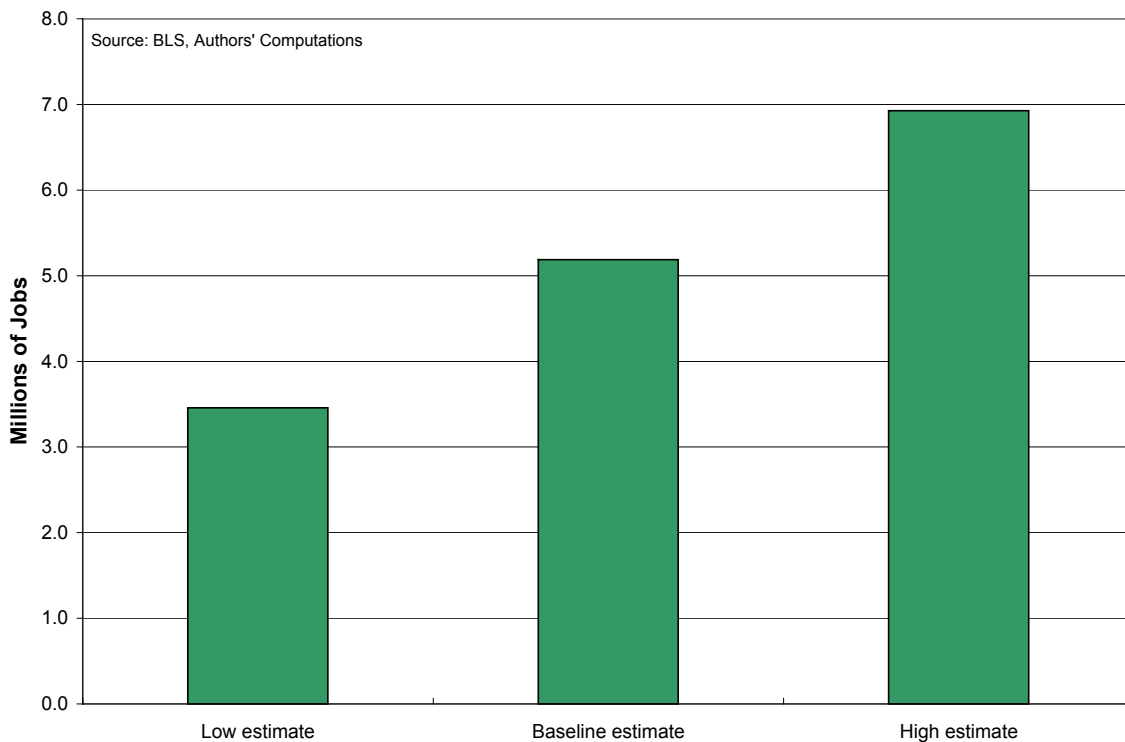


Chart 5
Average Employment Change and Monthly Growth Needed for Full Employment by January 2006

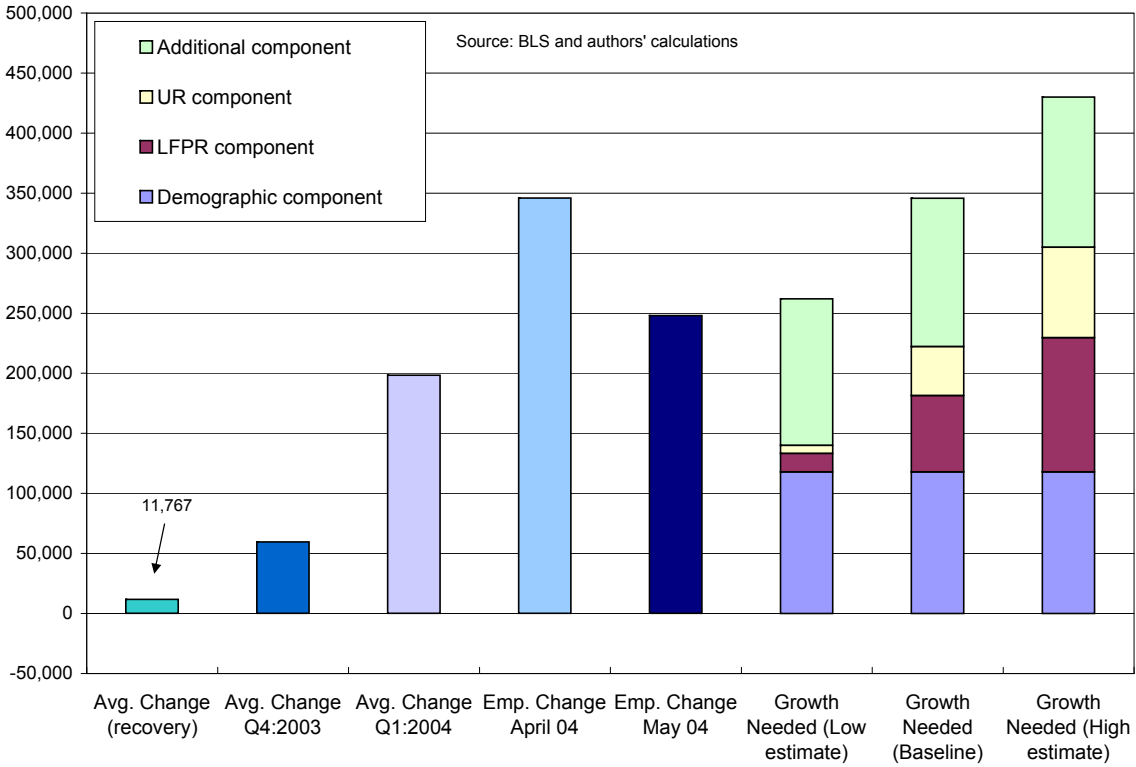


Chart 6
Unemployment Rate and Median Duration of Unemployment, 1969-2004

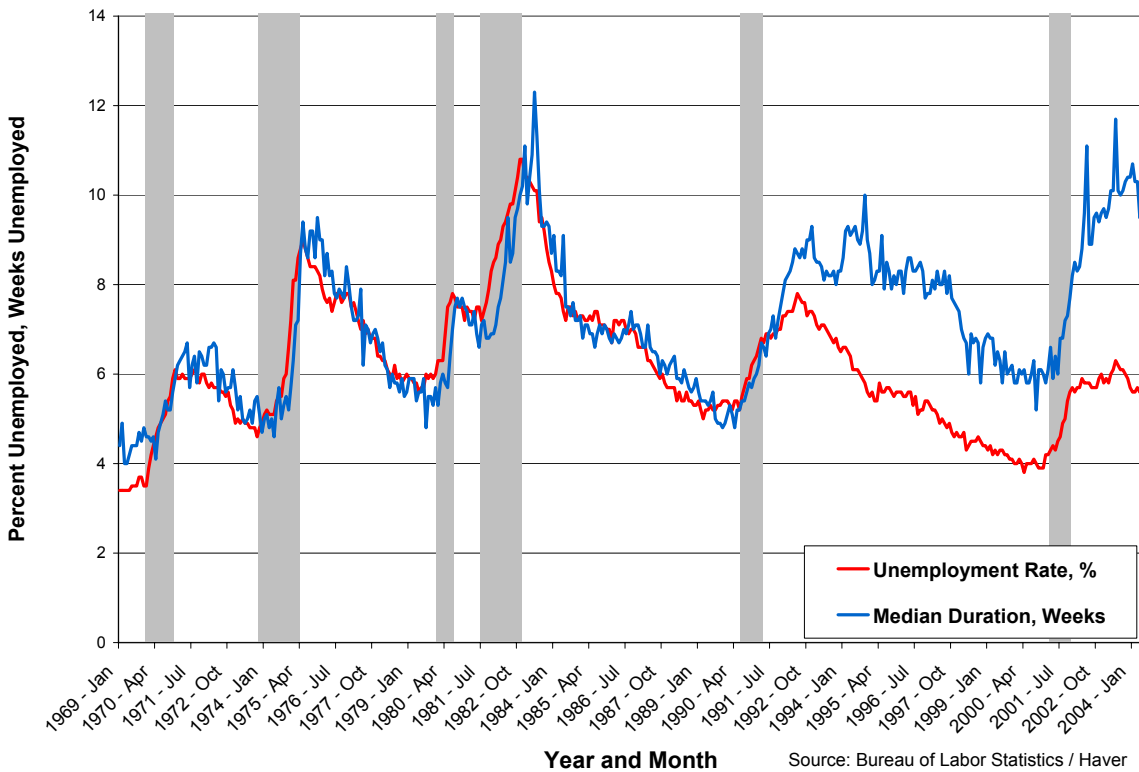
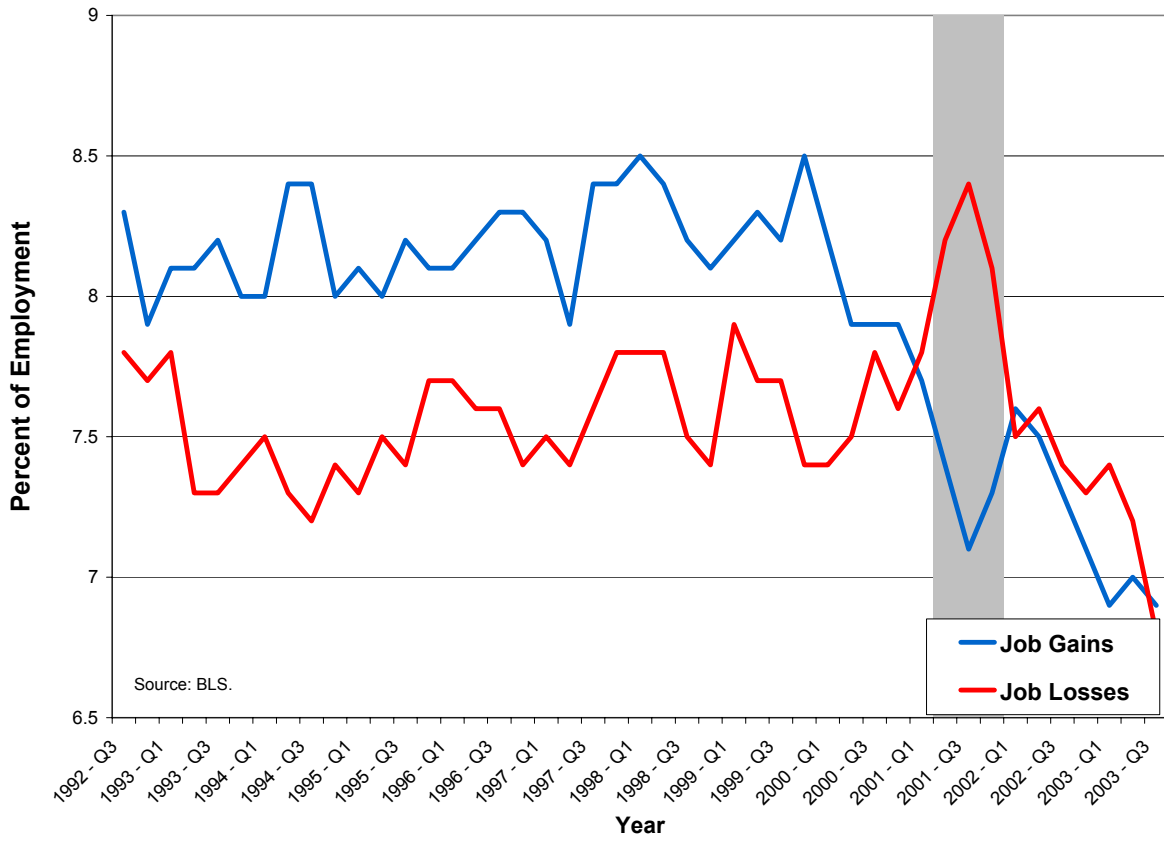


Chart 7
Private Sector Job Gains and Losses, 1992-2003



II. Outsourcing

Almost daily, we read that yet another major U.S. company has laid off several thousand U.S. workers while moving back office or skilled programming work, a call center, or even the whole corporate HR function to China, India, or some other low-wage country. Altogether, these articles suggest that an estimated 250,000 to 500,000 business service jobs have flown abroad in the past three years. Because these job shifts have coincided with the weakest U.S. job growth of any post-World-War-II recovery, many observers have concluded that job relocation overseas “explains” a major part of our job market malaise. The fact that China has a \$100 billion trade surplus with the U.S. and accounts, by itself, for one quarter of our huge trade deficit just adds to growing concerns about U.S. workers’ ability to compete with developing Asia’s increasingly skilled but low-cost labor force. As a result, members of Congress and state legislators are calling for – and passing -- measures to stem the job flow.¹

This section of the brief reviews the available evidence on the outsourcing phenomenon. It concludes that job relocation overseas has contributed just modestly to our employment performance – both recently and over the longer term. The impact is – and will likely remain – modest, in part because the trade and investment flows that facilitate foreign outsourcing trigger offsetting equilibrating forces. Historically, moreover, the integration of dynamic new regions, like Japan and Korea, into the world economy has always benefited other countries.

To address these points in more detail: Along with intense media coverage of job loss to Asia, a near-record U.S. trade deficit relative to GDP has spread the idea that “offshoring” largely explains this country’s weak job growth. However, as Chart 1 suggests, the trade deficit also deteriorated very fast in the late 1990s, when job markets

¹ For example, as of April 20, 2004, proposed legislation in Congress included a bill banning offshore outsourcing of federal service contracts; a bill rendering companies that have outsourced jobs in the previous five years ineligible for federal grants, contracts, loans, and other federal funding; and a bill prohibiting business enterprises that lay off a greater percentage of their U.S. workers than their workers in other countries from receiving any federal assistance. Additionally, as of May 10, 2004, thirty-one states had passed referendums banning state agencies from using offshore foreign labor.

were tight and employment was growing at a decent clip. In other words, a growing trade deficit need not conflict with job creation. To the contrary, in fact, periods of rapid growth in U.S. demand and employment tend to coincide with a deteriorating U.S. trade balance, while recession periods generally see some improvement.

Moreover, as Chart 2 suggests, China's large and much remarked share of the U.S. trade deficit is not really that unusual. Europe represents a 20 percent share today. And in the mid 1980s, Asia's Newly Industrialized Countries (the NICs) accounted for about the same share that China does today, while Japan represented an even larger fraction. But as China's share has grown over time, Japan and the NICs' shares have shrunk – in part because Asian firms have also been outsourcing to China. Chinese workers now assemble components imported from the rest of Asia and export to the United States goods that Japan and the NICs once exported directly, rather than indirectly, to this country.

China also caused a recent stir because it became the top destination for foreign direct investment flows² in 2002, displacing the United States from its traditional first place position (Chart 3). But 2002 was an unusual year. China's pending and then actual admission to the World Trade Organization in late 2001 drew attention and suggested that the country had become an upstanding member of the community of nations. Even more, in 2002 direct investment flows into U.S. plant and equipment may have been damped by concerns about terrorism and U.S. accounting scandals, and, possibly, by a reaction to over-investment in U.S. dot-com and other facilities in the late 1990s. Further, recent data indicate that while FDI flows to China rose less than 2 percent to \$53.5 billion in 2003, FDI flows to the United States tripled to \$86.6 billion. As a result, the United States returned to its traditional place as the top destination for direct investment. Moreover, judging by total private financial flows (Chart 4), on a *net* basis, the United

² Foreign direct investment refers to the acquisition of physical assets, such as plant and equipment, located abroad. According to U.S. regulations (and the World Bank definition), FDI occurs when an investor owns at least 10 percent of the voting stock of a foreign company since 10 percent ownership is considered enough to confer control.

States remains a magnet for foreign investors because of its large market size, highly productive workforce, and ongoing supply of promising investment opportunities.

Of course, U.S. workers and voters have long since grown blasé about U.S. manufacturing jobs going overseas as product cycles have matured and as U.S. employment has shifted from agriculture to manufacturing to services and knowledge-based activities. But despite the steady increase in FDI, jobs at foreign affiliates of U.S. firms have stayed below 10 percent of U.S. non-farm jobs for over two decades (Chart 5). To be sure, that share did edge up in the late 1990s, when employment was growing robustly and labor markets were tight, but then we labeled outsourcing “a welcome safety valve” that allowed us to grow faster than otherwise possible without triggering wage or price inflation. Notably, moreover, on average, and in China too, these foreign facilities sell just 10 percent of their output (in value terms) to the United States, while 90 percent goes to customers in the host country or in other foreign markets. Some of these sales to foreigners substitute for U.S. exports, no doubt, but these transactions often require parent exports of inputs, capital equipment, and supporting services. In other words, these affiliate sales generally facilitate and complement U.S. exports and support U.S. jobs.

If outsourcing per se is nothing new, what is? What’s new – and troubling to some – is that outsourcing now involves services and the export of moderately high skilled, white-collar jobs as the U.S. economy has grown increasingly knowledge-based, and as China and India have accumulated human capital. Historically, as production of shoes and toys, TVs and VCRs, semi-conductors and flat-screen monitors has moved offshore, U.S. workers have shifted to “better,” more productive, higher wage jobs in burgeoning industries or to the high-value-added parts of mature industries. But now, at least some of the jobs flying overseas *are* the better jobs: the highly skilled, professional jobs in programming or software design, microeconomics, and radiology – the “new” service industries where the United States was supposed to have a comparative advantage. And the numbers are notable. Judging from U.S. Bureau of Labor Statistics data, as many as 300,000 business and professional service jobs may indeed have been

lost to import competition and overseas job relocation over the past three years. That's telecommuting on a grand scale – a scale made possible just recently by technical standardization and a sharp decline in communications costs between the United States and Asia following rapid expansion of the communications infrastructure in the late 1990s. Providing a further push, as Y2K approached in a period of tight labor markets, U.S. employers began to experiment with hiring foreign programmers here and abroad, testing the concept and proving it valid.

But startling as these job shift numbers are, their economic impact has been pretty modest to date. When U.S. firms outsource programming jobs to India, say, whether by opening their own operations in Bangalore or by contracting with an Indian firm, the strategy leads to increased U.S. imports of computer services. Imports of all services amounted to 2 percent of U.S. GDP in 2003 (Chart 6), but the bulk of these service transactions were related to travel and transportation and royalties and fees. The business and professional services of most interest in the current debate are categorized as “other private services,” which amounted to 0.7 percent of GDP in 2003, while U.S. imports of “other private services” from *all* of developing Asia, not just India and China, amounted to less than one-tenth of 1 percent of U.S. GDP. That's far too small to have had any significant impact on U.S. output or job growth.

Further, while everyone knows that this country is running a huge trade deficit overall, far fewer people seem aware that the U.S. continues to enjoy a surplus in services trade – even a growing surplus in other private services vis-à-vis the world and vis-à-vis developing Asia (Chart 7). In other words, U.S. workers remain highly competitive in high-value added services – even in Asia.³

In addition, the job flows linked to outsourcing must be viewed in the context of the truly extraordinary dynamism of the U.S. economy, where almost one million people leave a job and almost one million people start a job every week. From time to time, over

³ The U.S. surplus in total services trade is narrowing because of a growing deficit in passenger fares and “other transportation.” But the surplus for most components of “other private services” is either stable or growing. By exception, the U.S. has a growing deficit in insurance services and a shrinking deficit in telecommunications services.

periods of a year or two, job separations may slightly exceed hires, causing employment to fall, but, over the long haul in the post World War II era, hires have exceeded separations and employment has grown decade after decade.

How has the recent bout of outsourcing affected these dynamics? Since the mid 1990s the U.S. Bureau of Labor Statistics has been collecting data that provide some clues. These BLS data record the reasons for all layoffs involving 50 or more workers in a five-week period and lasting more than 30 days. According to these data, import competition and job relocation overseas explain just 2.4 percent of such layoffs in 2001 through 2003 (Chart 8).⁴ Together the two reasons account for the same share of layoffs as in the boom years of 1998-1999. Of course, most layoffs undoubtedly have multiple causes, and outsourcing could be masquerading in other categories. In particular, the data indicate that layoffs due to “contract completion” picked up sharply in the past two years, possibly reflecting a shift from domestic to foreign outsourcing. Further, “not reported” spiked sharply in late 2002 and 2003, although the numbers in that category have subsided more recently. Still, even tripling or quadrupling the shares attributed to import competition and job relocation would leave *domestic* developments like internal reorganization and slack work explaining the bulk of recent mass layoffs⁵.

Turning from large layoffs to the broader employment picture, in 2001 through 2003, U.S. workers experienced 143 million separations – 56 million involuntary layoffs and discharges and 87 million quits and other forms of separation (Chart 9). The separations were largely offset by 141 million hires, but, in this time of recession and sluggish recovery, the net result was a small negative – a net 2 million separations over the three-year period.

⁴ Excluding all layoffs caused by temporary factors (labor disputes, repairs, etc. as well as “seasonal”) raises the import competition/job relocation overseas share to almost 4 percent of “permanent” layoffs.

⁵ Starting with the first quarter of 2004, for all layoffs except seasonal and vacation period events, the BLS Mass Layoffs Statistics program began asking whether a layoff involved moving work to another location within the same or another company. If it did, the program also asked if the work was moved overseas or to another domestic location. According to the first release of the new data, in the first quarter of 2004, 2.5 percent of all separations excluding seasonal and vacation period layoffs involved shifting work to overseas locations. Almost two-thirds of the jobs moved overseas remained within the same company. While these new data are not strictly comparable to the pre-2004 MLS data, the results are very similar – layoffs caused by job relocation overseas remain a very small part of total mass extended layoffs.

Assuming (from the data on mass extended layoffs) that job relocation and import competition accounted for 2.4 percent of *all* 56 million layoffs made in 2001 through 2003 suggests as a rough estimate that outsourcing led to about 1.3 million layoffs over those three years.⁶ Of course, some job loss may have occurred through attrition rather than layoffs, suggesting a slightly higher number. These are big numbers. No wonder everyone knows of someone whose job has gone to India or China or the Philippines.

But, of course, outsourcing has led to U.S. hiring as well. Indian computer and business service firms are now “insourcing” to the United States, for instance, looking to buy or establish a U.S. affiliate so that they can better manage their interactions with their U.S. customers. And Indian call centers rely on U.S. software, U.S. communications equipment, and U.S. air conditioners, while their newly affluent young workers, the members of India’s “Zippy Generation,”⁷ buy U.S. jeans and U.S. DVDs. Further, U.S. firms across the economy have also been able to cut their computer hardware, software and other input costs by sourcing these items offshore. These cost reductions have allowed them to attract business they otherwise would not have had – employing people they otherwise could not have employed. Analysts do not know how many hires outsourcing generated over the past three years – how many outsourcing-related hires offset some or possibly even most of the 1 million layoffs attributable to outsourcing over this period. But it is clearly wrong to compare the estimated 1 million *gross* layoffs caused by outsourcing with the *net* loss of 2 million jobs between late 2000 and late 2003. That would be like comparing an apple with half an orange.

But what of the dog that didn’t bark – the jobs the U.S. economy failed to create because of outsourcing? After all, while job destruction surged in the recession and fell back in the recovery, as expected, job creation has continued to sag. Perhaps outsourcing explains the unusually weak job creation? The limited job creation data available do

⁶ Similarly, 3.8 percent of 35.7 million “permanent” layoffs amounts to an estimated 1.3 million jobs lost to import competition or job relocation overseas in 2001 through 2003.

⁷ The generation named for the young professionals who zip purposefully around on motor scooters.

indeed show that hiring rates in professional and business services, like computer programming and office support, have fallen more than hiring rates for the average U.S. industry since 2001. But hiring rates have also fallen more than average in wholesale and retail trade; transportation, entertainment and recreation; and accommodation and food services – all industries not well suited to outsourcing. Once again, it appears to be domestic forces that have discouraged job creation.

Looking ahead, outsourcing to a succession of low-cost areas will surely continue. When back office jobs first went abroad, they went to the Caribbean and Ireland – not China and India. Perhaps South Africa’s turn will be next. Favored outsourcing sites shift because trade sets off equilibrating forces that tend to equalize labor costs across regions over time. These forces include supply and demand. For instance, news reports indicate that Indian programmers are getting big raises – as much as 80 percent – this year. In addition, as low-income countries accumulate physical and human capital, their workers’ productivity increases – and so, accordingly, do their wages. Finally, exchange rates can also play an equilibrating role. For example, in the early 1990s, capital streamed into the Asian miracle countries, pushing up their labor costs in dollars as well as their asset prices.

In the mid 1980s, as Chart 10 shows, Japan’s manufacturing wages were about half of the U.S. equivalent, although this wage-cost advantage was cut considerably by its lower labor productivity. In other words, the cost of the labor required to produce a given volume of output in Japan was about 70 percent of the U.S. unit labor cost. At that same time, Korea’s wages were about 10 percent of U.S. manufacturing compensation, while its unit labor cost was close to 40 percent of the U.S. standard. By 2000, fifteen years later, Japan’s unit labor costs had risen to match those in the United States, while Korea’s unit labor costs were about 80 percent of the U.S. base. China’s unit labor costs are very low now, but it is a good bet that they will rise like Japan’s and Korea’s before them over the next 15 years.

Over the past half decade, despite this country’s increased exposure to international trade, U.S. jobs have always grown faster than the population (Chart 11).

Employment has grown fast enough to absorb a growing population and increases in labor force participation, particularly by women. This relationship held during the period of U.S. business expansion in Europe in the late 1960s and 1970s, the years of Jean-Jacques Servan-Schreiber's The American Challenge, when Europeans were sure that Americans would wind up owning all of Europe. The relationship also held in the 1980s, the era of Ezra Vogel's Japan as Number One, when the land under the Emperor's palace in Tokyo was worth as much as the state of California, and we thought the Japanese were going to buy up much of America. And it held in the NAFTA (North American Free Trade Agreement) years, despite that giant sucking sound. None of these episodes has had any perceptible lasting impact on U.S. job growth over the decades. The same will surely be true of China and India's emergence as economic powers.

In summary, trade and labor market data tell the same story: Domestic developments are largely responsible for the recent job-market weakness in the United States. Looking ahead, offshore outsourcing will continue, as sources of comparative advantage shift over time. But, like all international trade, foreign outsourcing increases the productivity of U.S. workers and, in aggregate, will raise real incomes in this country. In the meantime, relatively accommodative monetary policy can hasten the re-employment of individuals hurt by trade, muting calls for costly protection.

Chart 1
U.S. Trade Deficit as a Share of GDP and Nonfarm Employment

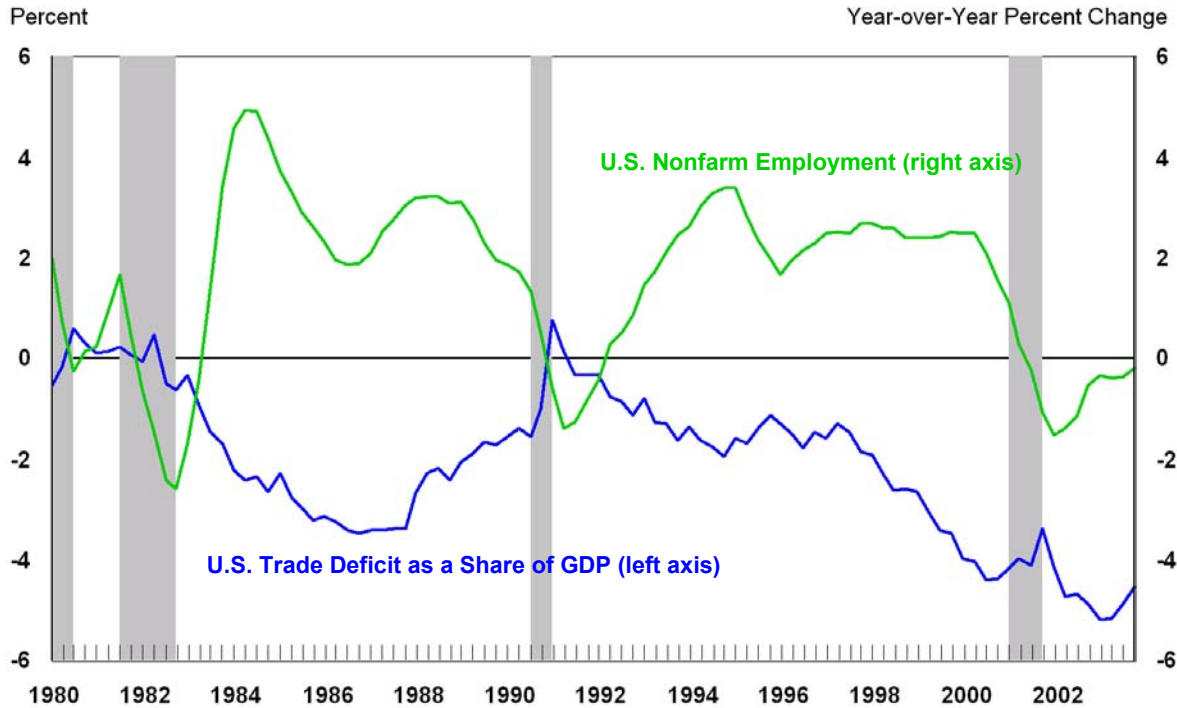
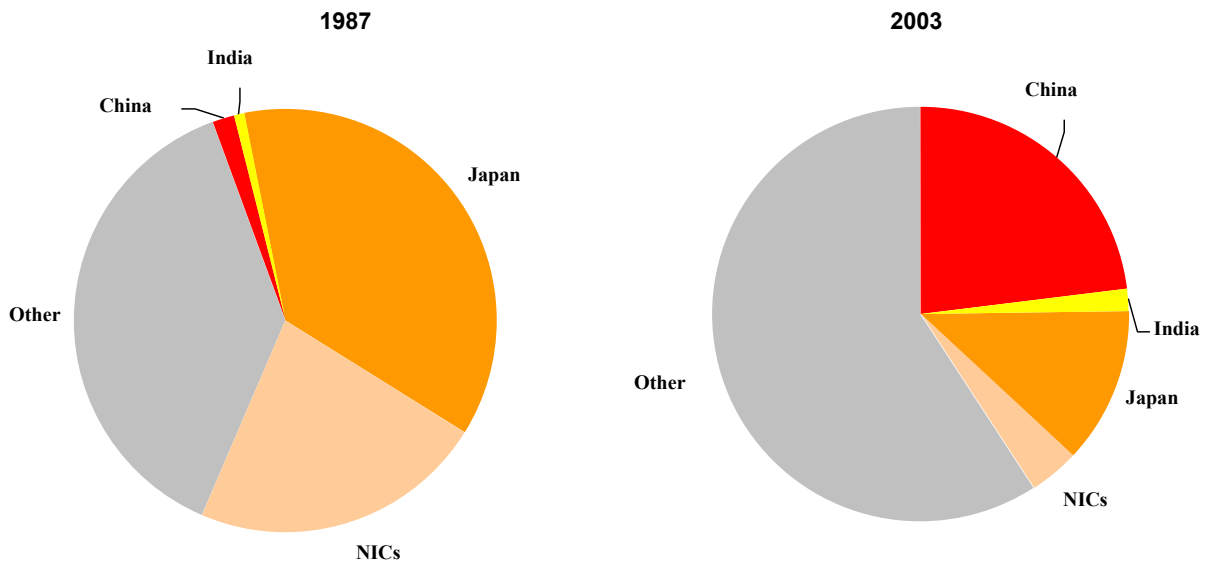
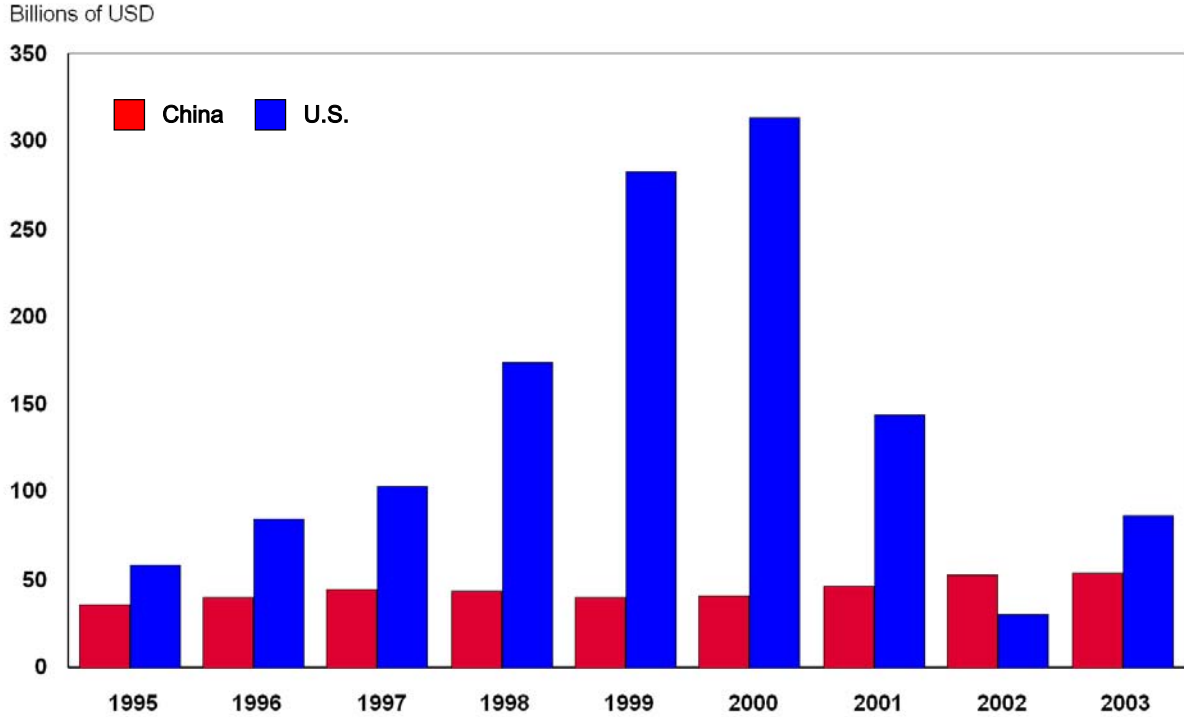


Chart 2
Trade Partner Shares of the U.S. Trade Deficit



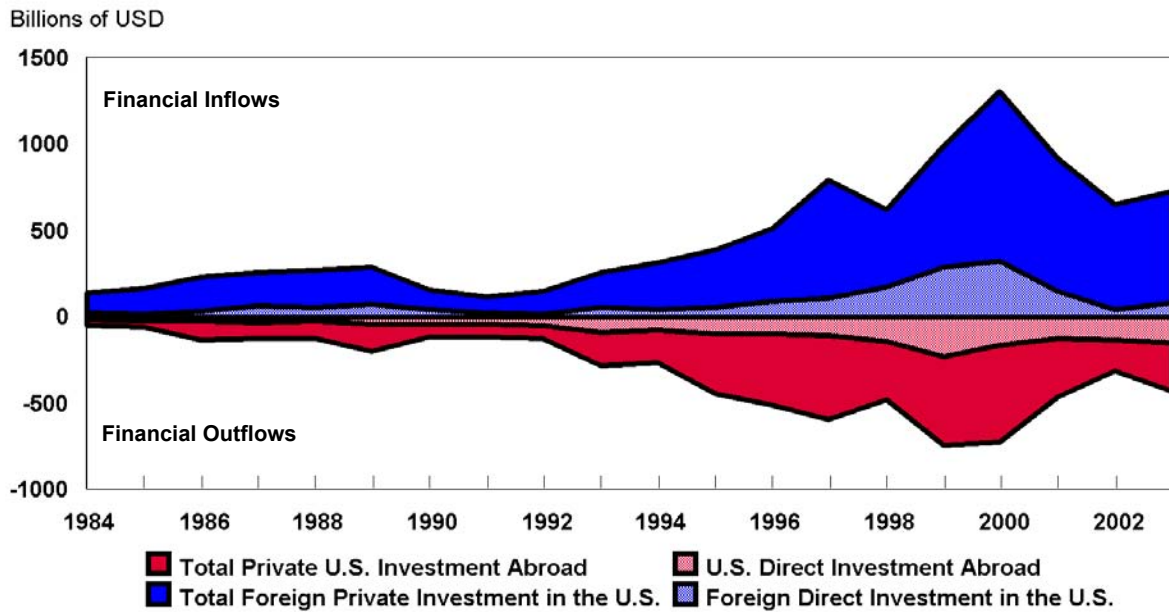
Source: U.S. Census Bureau

Chart 3
Foreign Direct Investment in China and the U.S.



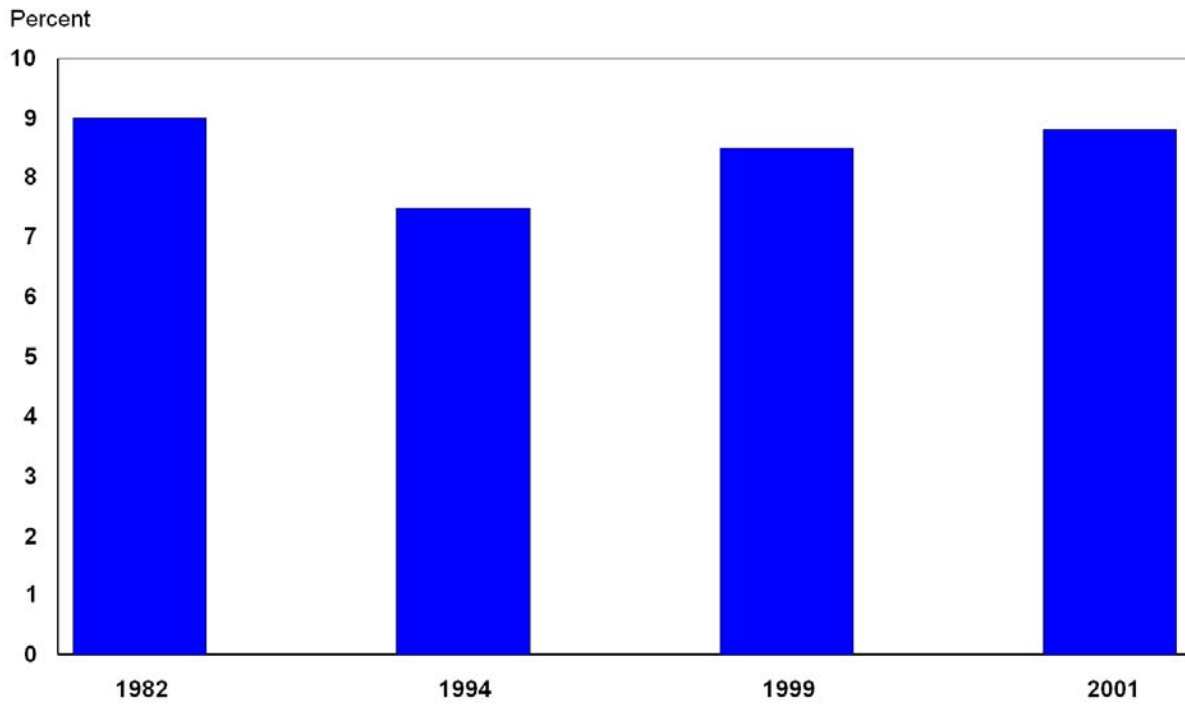
Source: United Nations Conference on Trade and Development (UNCTAD), Ministry of Commerce of the People's Republic of China

Chart 4
U.S. Financial Inflows and Outflows



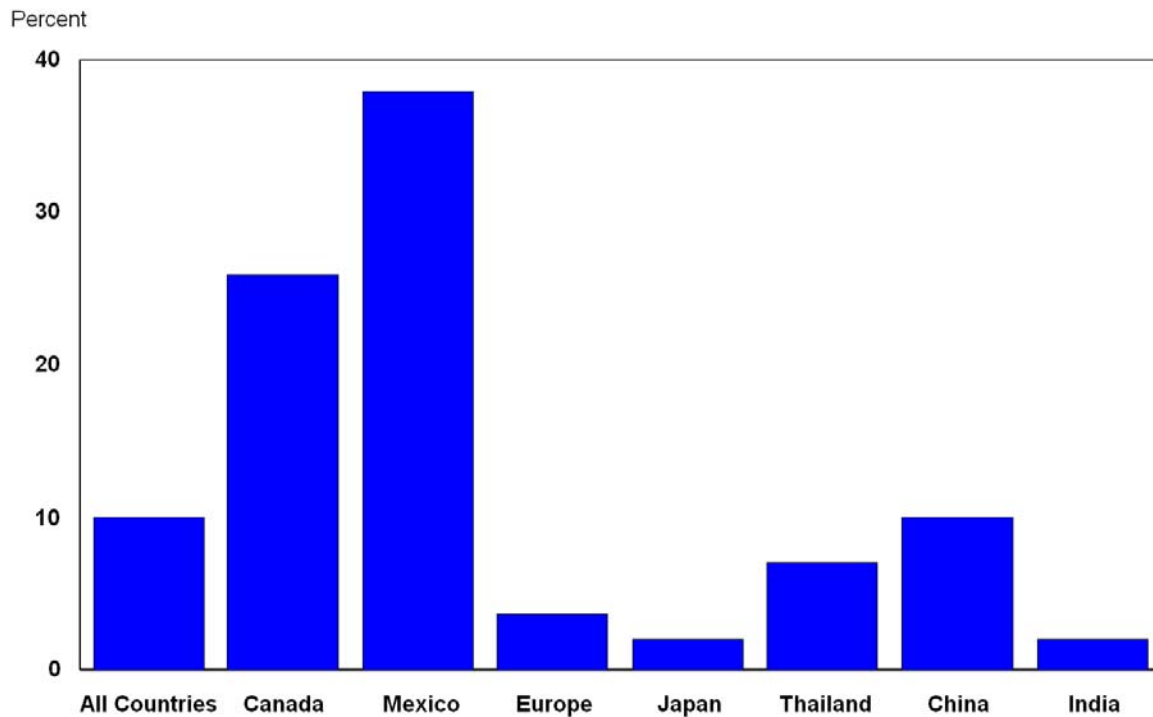
Source: Bureau of Economic Analysis

Chart 5a
U.S. Affiliate Employment as a Share of Non-Farm Employment



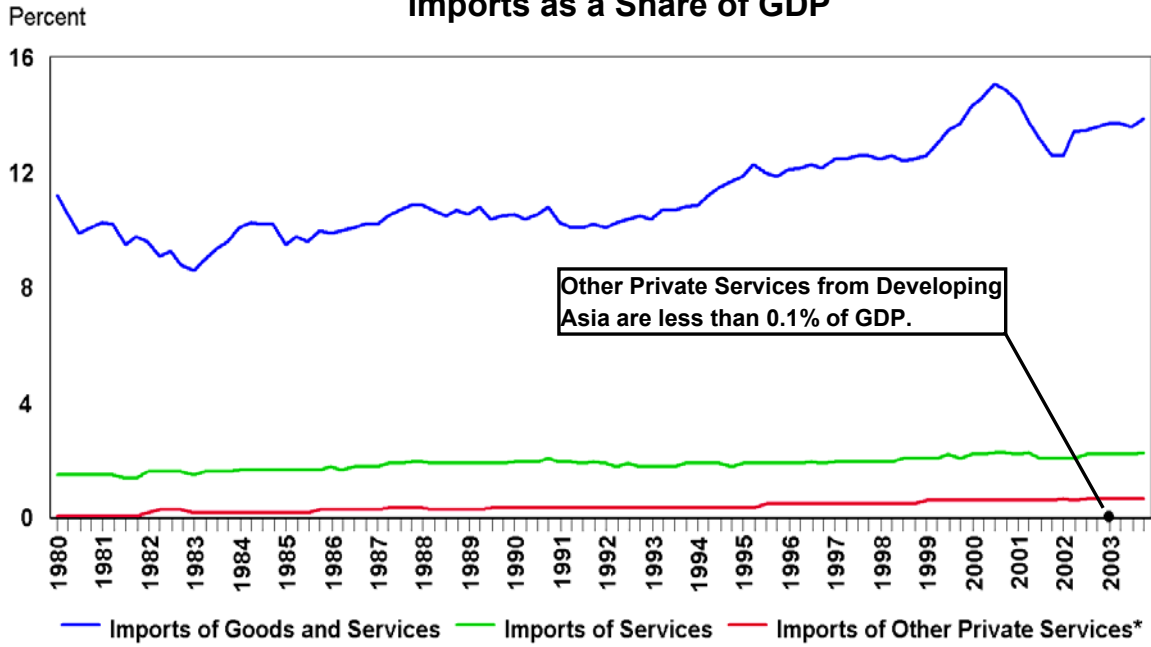
Source: Bureau of Economic Analysis

Chart 5b
Affiliate Sales to the U.S. as a Share of Total Affiliate Sales - 2001



Source: Bureau of Economic Analysis

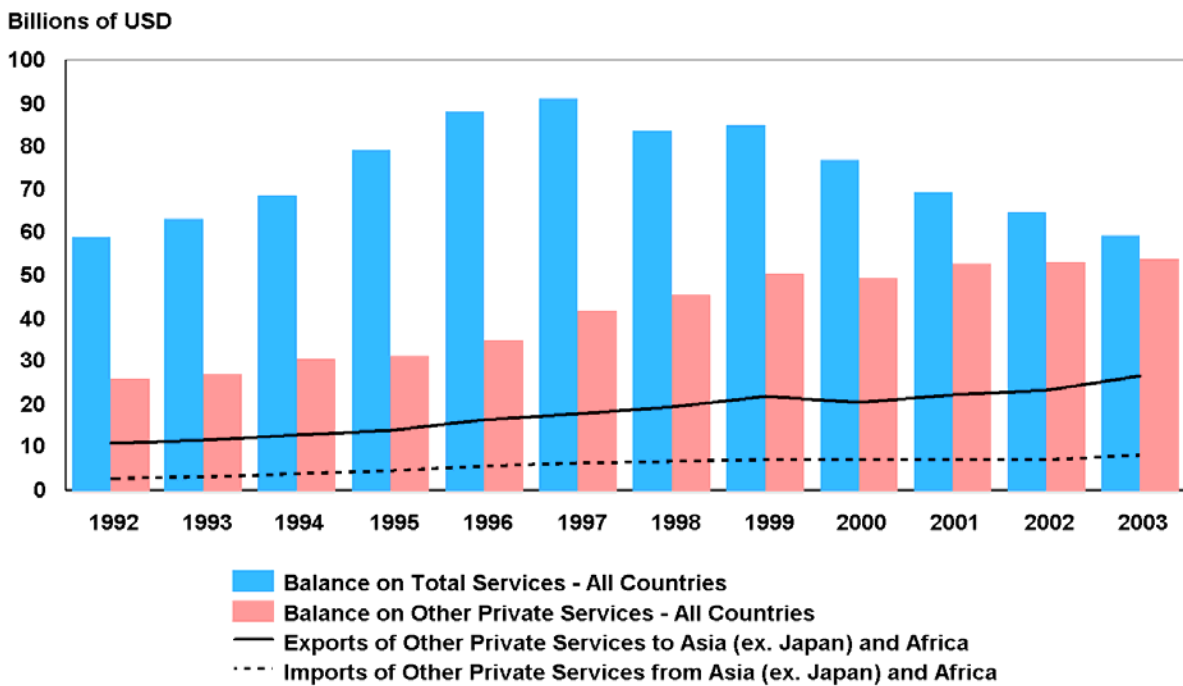
Chart 6
Imports as a Share of GDP



**Other private services" are services less defense expenditures, travel, transportation, fares, license fees, and royalties.

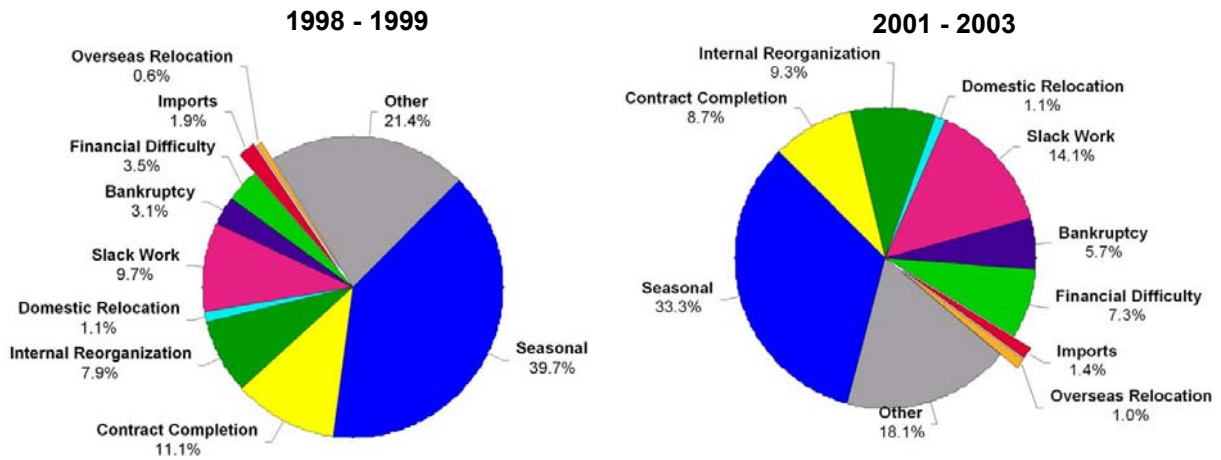
Source: U.S. Census Bureau

Chart 7
U.S. Trade Balance on Services



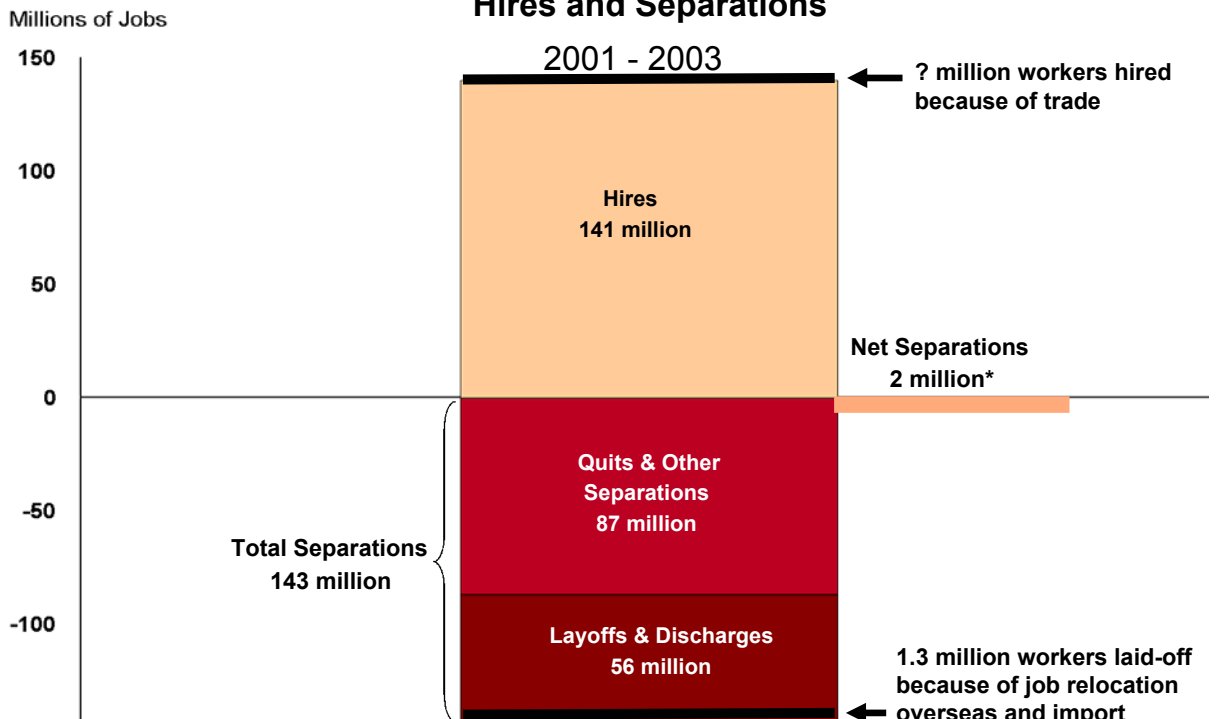
Source: U.S. Census Bureau

Chart 8
Reasons for Mass Extended Layoffs
Share of Separations¹ by Reason



¹Total U.S. separations
 Source: Bureau of Labor Statistics

Chart 9
Hires and Separations

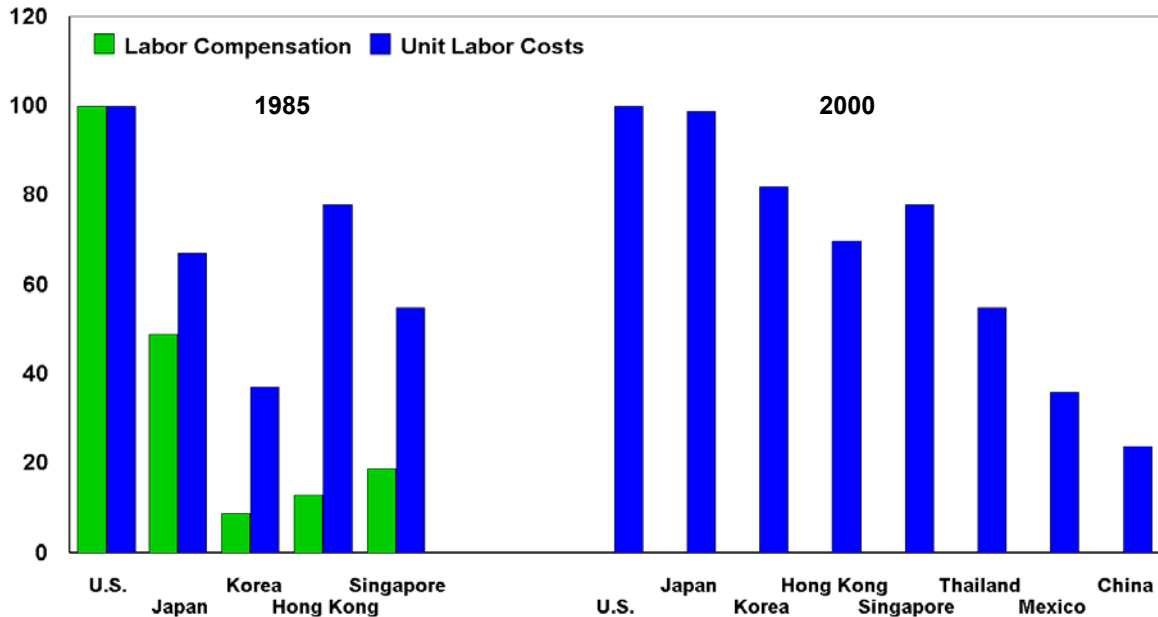


*With a decline of 1.1 million in the rate of job openings, this number corresponds to a loss of 3.1 million non-farm payroll jobs between Dec. 2000 and Dec. 2003.
 Source: Bureau of Labor Statistics

Chart 10

Estimated Relative Labor Compensation* and Unit Labor Costs* in Manufacturing

Index: U.S. = 100



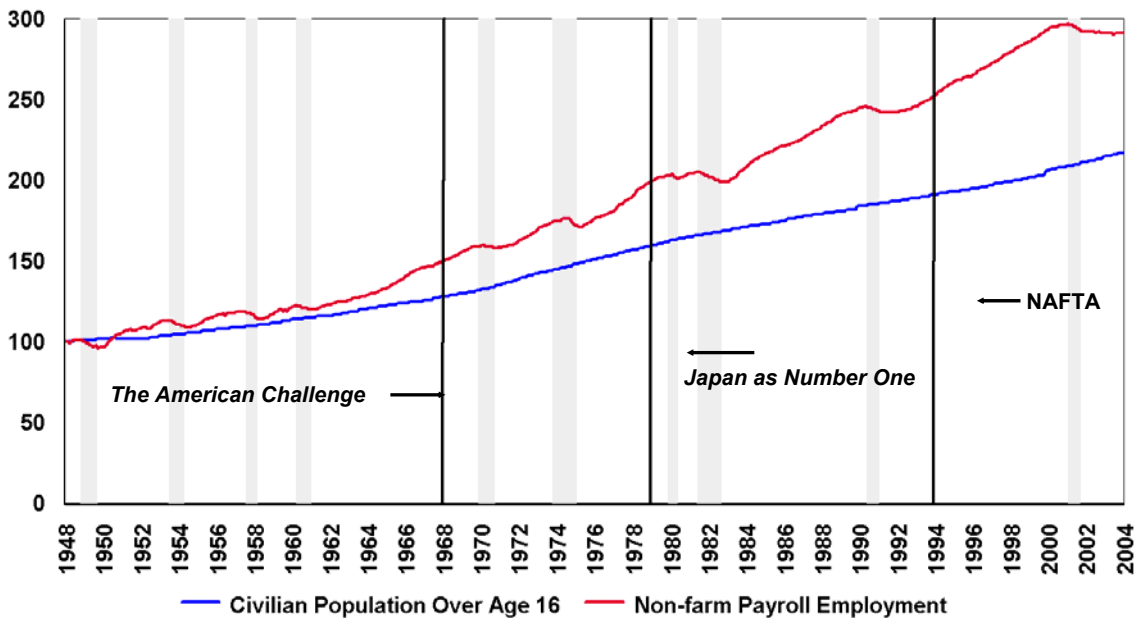
*For manufacturing production workers in U.S. dollars

Source: Bureau of Labor Statistics; The World Bank, *World Development Indicators 2003*; Board of Governors of the Federal Reserve System

Chart 11

U.S. Civilian Population and Non-farm Payroll Employment

Index: Jan 1948 = 100



Source: Bureau of Labor Statistics

III. Productivity and Costs

Thus far, we have examined and ruled out three potential explanations for the “job loss recovery” – data measurement error, labor force changes, and international trade (outsourcing). Now we turn to the last of the primary explanations being offered: productivity, which is linked inherently to labor costs and corporate profitability. Recently, the conventional wisdom espoused in the media has turned toward productivity as the most likely reason for sluggish employment growth during this recovery. The remainder of the brief examines this hypothesis.

This section of the brief covers the topics in Box 1. First, we will review briefly the empirical evidence on productivity and employment over the business cycle. In this recovery, productivity has grown rapidly, and employment slowly, relative to past recoveries. Second, we will review the theoretical relationship between productivity and employment, and the reasons firms change them in response to economic conditions. Productivity comprises three main components: one of which is a long-run trend, and two of which are short-run, transitory responses associated with cyclical fluctuations and with unexplained factors. Third, we will consider three potential explanations for higher-than-usual productivity growth: 1) high labor costs and low corporate profitability; 2) unusual structural changes; and 3) uncertainty about the strength and durability of the recovery. Finally, we will offer forecasts of employment conditional on consensus forecasts of GDP growth and alternative adjustment paths for productivity to provide a benchmark for understanding and interpreting the employment data in the coming months.

Chart 1 quantifies the relative performance of employment and productivity during this recovery. Each panel plots the level of data around the business cycle peak, which is denoted as quarter zero with a vertical line. Quarters to the right (positive) show the data during the subsequent recession and recovery; quarters to the left show the data in the period leading up to the peak. Bear in mind that the length of recession varies across business cycles. The solid red lines represent the current business cycle (peak in 2001:Q1) and the dots represent estimates for 2004:Q2 based on employment

and hours data for April and May. The dashed lines represent the average across all previous business cycles since 1960. The gray shaded regions represent the ranges of all business cycle observations prior to the current cycle.

Employment has been unusually slow to recover during this cycle. The decline in employment during the 2001 recession was not unusual compared with the average decline. However, eight quarters after the peak employment was still well below its peak value, and even below the bottom end of the historical range during recoveries. After twelve quarters (in 2004:Q1), employment was still historically low. The recent surge in employment of nearly 1 million in March through May puts the most recent quarter back into the historical range but still well below the average level during recoveries. Employment also was relatively high before the recession and thus grew more slowly than is typical heading into it. In contrast, productivity has been unusually high during the current recovery, although not quite as unusual. Since the fourth quarter after the peak, productivity has been much higher than average but still within the range of historical experience. Productivity was relatively low before the recession, and thus grew much faster than is typical heading into it.

The relatively weak recovery of employment and relatively strong recovery of productivity have been widely noted. However, some observers have gone beyond this observation to suggest that strong productivity *explains* the weak employment, as if the performances of productivity and employment were always mirror images of each other. This strong conclusion is incorrect, strictly speaking, but there are circumstances – like the past two recoveries – when they move in opposite directions temporarily.

Productivity essentially has been the dominant engine of growth in non-farm business output during the current recovery, as Box 3 illustrates. Output may be decomposed into three components: productivity (output per hour), hours per worker, and employment. From the recent recession trough through the end of 2003, output grew 8.5 percent. During that same period, productivity grew even more, rising 9.9 percent. The other components have declined during the recovery, hours per worker having fallen 0.6 percent and employment having fallen 0.7 percent. Although

productivity typically plays a dominant role during the early stages of recovery, it is quite unusual for it to be essentially the only growing component of output.

However, the dominance of productivity in output growth during this recovery does not imply that productivity “explains” slow employment growth. Rather, firms intentionally and simultaneously choose productivity and employment (and hours per worker) when they decide to produce a certain amount of output. Only in situations where the amount of output is fixed can there be a strict tradeoff between productivity and employment – and even then, only if hours per worker are fixed too. More generally, firms choose to produce a certain amount of output by weighing carefully the costs and benefits of relying on each component. (See Box 3.)

In the long run, output, productivity, and employment all tend to move together in the same direction. However, when demand for output falls below the potential level of output the economy can produce, as in recessions and early recovery stages, firms face limited demand for their output. In these circumstances, firms can choose to respond to demand by adjusting any one of the three components of output. So, during this “job loss recovery,” the key question is: Why have firms chosen to respond to increasing demand entirely through higher productivity rather than by raising employment (or hours per worker)? The answer to this question will explain both relatively weak employment and relatively strong productivity during this recovery. In other words, productivity does not explain the behavior of employment, but rather some other factor explains the behavior of both.

To gain a better understanding of the answer to this question, consider the decomposition of productivity depicted in Box 3. First, we separate long-run and short-run movements. Then we identify the component of short-run movements that can be linked directly to business cycle fluctuations. The remainder of the short-run component is the part of productivity that cannot be explained by economic theory and data.

Trend productivity grows in the long run through the stock of capital – through technological change embodied in physical capital, through improved worker skills in

human capital, and through improved methods of combining physical and human capital in organizational capital. In the long run, employment is positively correlated with trend productivity. The short-run component of productivity is the transitory deviation of productivity from trend. The cyclical part of productivity is determined by firms' responses to changes in business cycle conditions. Firms alter the intensity of effort by their workers to avoid costly firing and hiring decisions during temporary downturns in economic activity, and they reallocate workers between alternative production activities and locations in response to these downturns. Cyclical productivity is the portion correlated with key macroeconomic variables.

Our best estimates indicate that trend productivity growth probably increased significantly sometime in the latter part of the 1990s, as shown in Chart 2. Estimating trend productivity is tricky, and there are several ways to do so. We use a statistical procedure that maximizes the chances of finding the most significant trend changes without imposing our preconceived notions on the data.¹ The procedure suggests that trend productivity has been growing 2.9 percent per year since 1997. Our estimate uses productivity data only through 2002 because the estimate of recent trend productivity is very sensitive to the final data points, and the most recent data are based on preliminary data and thus expected to be revised the most. For example, using data through 2001 yields no second break in productivity but rather a continuation of the 1-1/2 percent trend (shown on the graph by extending that trend line). In contrast, using data through 2003 yields an even higher productivity trend of 3-1/2 percent. With estimates ranging from 1-1/2 percent to 3-1/2 percent over a three-year span of sample endpoints, actual trend productivity growth should be viewed as quite uncertain, and conclusions about it should be cautious and tentative. We return to this important point later.

The recent estimated trend is strikingly similar to the 2.7 percent pace estimated prior to the productivity slowdown that began around 1973.² This similarity raises the

¹ For more details of this technique, see Jushan Bai and Pierre Perron, "Computation and Analysis of Multiple Structural Change Models," *Journal of Applied Econometrics*, 2003, 18(1), 1-22.

² Statistically speaking, one cannot reject the hypothesis that the pre-1974 trend and the post-1996 trend are the exact same magnitude.

question of whether the recent increase in trend productivity is a new development, as is often described within the context of discussion about “The New Economy,” or a return to the usual long-run trend that prevailed at least since World War II. Regardless of which interpretation is correct, however, the recent increase in trend productivity should lead to an *increase* in employment, not a decrease, at least in the long run. And, in fact, this is what happened initially when trend productivity increased. During the four years 1997 through 2000 (December/December), employment grew 2.3 percent per year.

However, over the next three years, 2001 through 2003, employment declined 0.6 percent per year. If trend productivity increased in 1997 and did not change subsequently, as the data appear to show, then it is unlikely that higher trend productivity is responsible for the “job-loss recovery.” The only way in which higher trend productivity could possibly have retarded employment growth is if it increased again around 2001. If so – and this is a big, uncertain, and probably unlikely if – then it is conceivable that the higher trend productivity enabled firms to cut employment temporarily more than they normally would have during the recession and subsequent recovery. Nevertheless, a trend-productivity-induced reduction in employment almost surely would be short-lived because higher trend productivity is ultimately good for economic growth. Rather, higher trend productivity makes sluggish employment growth even more puzzling. Thus, slow employment growth during the recovery is more likely related to short-run factors such as the business cycle or some other unexplained factor.

One important effect of higher trend productivity on the cyclical behavior of employment is to raise potential output growth. If potential is higher, then actual GDP must grow even faster to raise employment than it would with lower trend productivity and potential output growth. Chart 3 illustrates this idea using the unemployment rate. If actual GDP grows faster than potential, then the unemployment rate tends to fall, and vice versa. If potential GDP growth has increased, as denoted by the “high potential growth” dashed line, then actual GDP growth through 2003 simply has not been strong

enough to reduce the unemployment rate significantly. Actual GDP growth began to rise above potential in 2003, and the consensus forecast of GDP growth is above potential for most of 2004, but it is forecasted to fall below potential in 2005.

If trend productivity and potential output growth really have increased, the forecast implies a modest improvement in unemployment (a decline of about 1/2 percentage point) in 2004 but not much change after that. This unemployment rate forecast implies that employment growth may exhibit a moderate burst in the first half of 2004, but it is likely to be relatively moderate after that. If the unemployment rate is about unchanged and the labor force grows about 1 percent per year, then employment will grow close to 1 percent as well (about 110,000 per month).

Assuming trend productivity growth increased significantly, we can evaluate the implications for short-run movements in productivity depicted in Chart 4. The top graph plots the total short-run component of the level of productivity (cyclical plus unexplained, thick blue line) and the cyclical component only (thin blue line). The graph shows, in percentage terms, how far productivity is from its long-run trend. Not surprisingly, productivity is relatively high – more than 3 percent above trend. But it is not unusually high, as it reached this level during several other expansions, including during the early 1990s. This conclusion, however, depends critically on higher trend productivity. If trend productivity were still growing at the slowdown rate of 1-1/2 percent, the deviation of productivity from trend would be more than twice as high now. Similarly, if trend productivity growth were significantly higher than 3 percent, then the short-run component would be much smaller. Thus, the higher is trend productivity growth the less evidence there is of an obvious productivity puzzle that can explain unusually slow employment growth.

Nevertheless, the recent surge in productivity over trend is not well explained by the business cycle. Given recent business cycle conditions, productivity should be only about 1 percent above trend during this recovery, a relatively weak rebound compared

with other business cycle episodes.³ Thus the unexplained component – the gap between total short-run productivity and cyclical productivity – is relatively high during this recovery, as can be seen in the bottom graph (black line). Unexplained productivity has been unusually high in two respects. First, it reached nearly 3 percent and has only approached this level two other times since the early 1950s. Second, it has been positive since 2000, a fairly long stretch for the unexplained component to be “one-sided.” This result could occur because trend productivity growth has been even higher than we estimate, or because there has been a persistent change in the behavior of cyclical productivity that we have not properly captured.

The analysis thus far leads us to ask: How can we interpret the recent unusual surge in unexplained productivity, and commensurate weakness in employment? Box 4 lists three potential explanations for consideration during the remainder of the presentation:

1. Firms are facing unusually high labor costs, and thus raising productivity to raise profits. We think this explanation is unlikely. Although some benefit costs are rising sharply, total labor costs are growing much more slowly than productivity, so unit labor costs are falling and profits are booming. If anything, this appears to be a good time to hire new workers because they are relatively inexpensive. If trend productivity growth has increased significantly, hiring new workers looks even more attractive. (Of course, the reverse is true too.)
2. Firms are facing a period of unusual structural change that requires massive reallocation of employment and heroic levels of productivity

³ The regression equation used to identify the cyclical component includes lagged values of the output gap, unemployment rate, capacity utilization, inflation, interest rates, inventory-to-sales ratio, and the corporate profit rate. It was estimated through 2000:Q4, so the estimated cyclical component during the recent business cycle is constructed with data from outside the estimation period. This approach means that recent estimates of the cyclical component assume there has been no change in the cyclical behavior of productivity during this recovery. Although this assumption could be incorrect, the approach provides a baseline for evaluating the extent to which the evidence might point to a structural change in the cyclical behavior of productivity.

to maintain output. We think this explanation is unlikely as well. As pointed out earlier (Section I, Chart 7), the pace of job reallocation is unusually low, not high as some observers have suggested. Job destruction has been relatively low, but job creation has been extraordinarily low during this recovery, so these data indicate clearly that very little structural change has been occurring. They also do not support the hypothesis that weak employment growth can be accounted for by transitory surges in productivity that are attributable to large shifts of workers to higher productivity jobs. Because the data stand starkly against it, we do not address this idea further.

3. Firms are uncertain about current economic growth and demand for their products and thus are reluctant to hire workers. Although we cannot prove this hypothesis conclusively, we think at least some aspects of it may have some validity. Certainly, a good deal of legitimate economic uncertainty still lingers despite strong growth during the past year. As discussed earlier, the actual rate of trend productivity remains rather uncertain over a wide range (1-1/2 to 3-1/2 percent). Furthermore, although real GDP has been growing relatively strongly, much of the strength is attributable to highly stimulative fiscal policy. Given budget deficits and other long-run government spending constraints, it is unclear how long this fiscal stimulus can continue and whether the private sector can grow robustly without it. Finally, geopolitical risks do not seem to have subsided materially. For all of these reasons, and potentially others, firms may be reluctant to hire workers at this time when they might have to fire them in the near future because it is costly to hire and fire workers. Instead, firms may see further productivity gains as a safer, less costly alternative strategy in the uncertain short run.

Chart 5 reveals how favorable labor costs are for firms, and how profitable firms are as a result. The top graph plots actual productivity growth against the two most common measures of total labor compensation (that is, wages and salaries plus all worker benefits) in real (inflation-adjusted) terms.⁴ Both measures indicate that real labor costs are growing around 3 percent. In the simplest of economic theories about the demand for labor, labor productivity and real labor compensation should grow at the same rate, but productivity is growing much faster (more than 5 percent) than real labor compensation. In other words, workers are generating more revenue through higher productivity than firms have to pay to compensate them. As a result, corporate profits are growing quite rapidly, as the latest data reveal in the bottom graph.

Although total labor costs are relatively low, firms clearly are concerned about some benefit components of labor costs that are rising rapidly. Chart 6 shows the evidence on two of the most nettlesome benefit costs, insurance and retirement, and compares them with wages and salaries. The top graph reveals that both costs grew at double-digit annual paces through 2003 – insurance, dominated by health care factors, grew 10 percent, and retirement grew 12.5 percent – while wages and salaries only grew 3 percent.

A surge in health care costs is not new. These costs also surged in the early 1990s (not shown), and firms made adjustments to their provision of these benefits to reduce costs, so we might expect a similar response this time. The escalation of total retirement costs is more unusual. As the bottom graph shows, defined contribution costs grew 1.8 percent in 2003, but defined benefit retirement costs have shot up 30.6 percent. Undoubtedly, firms are concerned about this development and are taking actions to change their cost structures in much the same way they respond higher to health care costs. But it seems unlikely that skyrocketing defined benefit retirement costs could elicit the kind of unusually weak aggregate employment recovery we have seen, simply

⁴ One measure is the Employment Compensation Index (ECI) data. The other measure is the non-farm business (NFB) data, which come from the same source as the productivity data. Both series are adjusted for inflation with the same NFB price index.

because they are very small, accounting for only 1.3 percent of total labor costs in 2003.

More importantly, high defined benefit costs probably cannot explain firms' reluctance to hire *new* workers (recall from Section I that job creation is the real problem) because firms could choose not to offer defined benefit retirement plans to new employees. In fact, firms increasingly have been making exactly this choice at least since 1996 when defined benefit costs amounted to 2.7 percent of total costs. Some commentators have argued that complex pension accounting and funding problems have been exacerbated by the stock market decline and have led to overstated profits. Neither we, nor anyone else, have been able to demonstrate convincingly yet how these problems explain the breadth and depth of weak employment growth during this recovery.

We now turn to some evidence in support of the idea that uncertainty about economic growth might be at least part of the reason that the unexplained component of productivity has been so large during the current recovery. The basic idea is that firms have been uncertain about the strength and stability of the recovery, at least until very recently (2004:Q2). Real GDP grew 4.3 percent during the four quarters of 2003 and 4.5 percent in 2004:Q1 – not bad by any reasonable standard. However, this growth was heavily influenced by fiscal policies enacted in 2001 and 2003 (and by monetary policy too). One of the most tangible aspects of the fiscal policy stimulus has been tax cuts that boosted personal after-tax income.⁵ These tax cuts were legislated to be transitory, with clear sunset provisions in future years. In addition, and especially with the second tax cut in 2003, it became clear that unexpectedly large budget deficits plus Social Security and Medicare funding troubles were likely to limit severely the ultimate magnitude and especially the duration of the fiscal stimulus. Thus, firms might reasonably be expected to view the fiscal stimulus as transitory, and there is some evidence of this.⁶

⁵ Tax policy changes also have affected business investment, but we focus on the implications for personal income and consumption.

⁶ Similar reasoning applies to the tax cuts that were aimed at stimulating investment by temporarily accelerating the depreciation expensing of investment spending.

Chart 7 depicts the relationship between fiscal policy and productivity by plotting real disposable income (personal income less personal tax payments, adjusted for inflation), along with productivity growth.⁷ To emphasize the underlying high-frequency trends in the face of unusual fluctuations in these data, we plot the two-quarter percent changes.⁸ Productivity and real disposable income growth have been very positively correlated during the current recovery, as Chart 7 shows, with two notable fluctuations in productivity corresponding with the two periods when personal tax cuts took effect. While productivity growth has been high on average during the recovery, it has fluctuated between very high (5 percent or more) and moderately high (3 percent), or about the same as the newly estimated productivity trend.

The correlation between productivity and disposable income during this recovery might have been coincidental or it might have been caused by a third factor common to both. However, it is also conceivable that firms perceived the tax cuts, as well as their effects on consumer spending and output, to be transitory. If so, firms may have decided to meet the perceived transitory increase in consumer demand with transitory increases in productivity rather than by hiring new workers and risking the need to fire them later. If firms somehow demanded greater (uncompensated) work effort from employees temporarily, or devoted more time to developing new ways to organize and streamline production activity (organizational capital) temporarily, then unexplained productivity would rise because these factors are not captured in the long-run trend or short-run cyclical components of productivity.

Although speculative, this uncertainty hypothesis has important implications if it is correct. In Chart 7, the cross-hatched forecast bar represents the forecast of disposable income growth as of March, and the solid bars represent the forecasts as of June. Actual

⁷ Real personal consumption growth is very similar to real disposable income growth and thus is omitted.

⁸ In addition, we adjusted the 2001 personal tax payment data to smooth the highly uneven nature of quarterly tax payments. This adjustment highlights the relevant trend movements in disposable income facing consumers, most of whom probably understand the implications of the uneven quarterly tax payments for their average income and consumption behavior during the year.

disposable income and productivity growth (solid lines) were very close to the forecast in 2004:Q1, both falling to about 3 percent again. Unlike GDP, however, disposable income is forecasted to grow weakly through 2005 as the effects of the tax cuts wane. If so, productivity also may grow more slowly in the near future – near the newly estimated high trend rate (3 percent). Absent another surge in disposable income from fiscal stimulus, productivity growth is likely to finally settle near its new – but still uncertain – long-run trend. If other components of GDP, particularly investment, do not pick up the slack and grow much faster, then employment could grow relatively weakly if the long-run productivity trend is relatively high (and vice versa).

In early April, it was unclear whether employment would grow substantively any time in the near future, but then we learned that payroll employment increased 947,000 in March through May. This recent employment rebound seems to suggest that uncertainty about the strength and stability of the recovery probably has at least partly, if not entirely, dissipated. The employment simulations in the next chart will provide some perspective on this. Ultimately, however, a more complete understanding of the role of uncertainty about the recovery will only emerge when the effects of tax cuts, both personal and corporate, finish working through the economy this year and next.

To conclude our analysis of productivity and employment, we close with employment projections for 2004 and 2005 beginning in 2004:Q2 (beginning in April for monthly data). Chart 8 juxtaposes the projections for productivity (left graph) and employment (right graph) to show the implications of alternative productivity paths for the forecast of employment. To make these projections, we make two key assumptions. First, quarterly real GDP will grow at the pace forecasted by the Blue Chip consensus (see Chart 3 for the quarterly path). In early April, consensus GDP growth was forecasted to be about 4-1/4 percent both in 2004:Q1 and in the four quarters of 2004. Actual data GDP growth in 2004:Q1 was 4.5 percent, and the early June consensus forecast for GDP is 4 percent during the next year (2004:Q2 through 2005:Q1). The second key assumption is that the long-run productivity trend is 2.9 percent. Thus, our

employment forecast assumes the GDP forecast is correct and that productivity follows a pre-specified adjustment path to its new, higher long-run trend.⁹

Given this GDP and productivity forecast, we project monthly employment for three simulated productivity paths from April 2004 through December 2005. The blue bars show actual payroll employment changes, with the lighter bars in April and May denoting actual data during the simulation period.¹⁰ In the first path, productivity reverts to its long-run trend in a manner similar to the early 1990s (yellow lines). In April (dashed employment line), we assumed it would take two quarters before returning to the estimated trend. But employment changes in March through May have been less than half the simulated value, and thus they argue for a slower reversion to trend. Consequently, the June simulation (solid employment line) assumes that it takes three quarters for productivity to revert to trend. In the second path, productivity continues from its current level along the new higher trend (green lines). In the third path, productivity is assumed to have achieved yet another higher trend growth rate, this one equal to the 4.7 percent rate observed during the “job-loss recovery” (purple lines). Although we are skeptical of this third alternative because it involves an implausibly high growth rate, we show its implications for employment to balance euphoric expectations about trend productivity.

If productivity reverts quickly to its long-run trend, as is common during recoveries, and the GDP forecast is correct, employment will increase rapidly (more than 500,000 per month) in 2004 and then increase at the lower end of the Blue Chip forecast range (108,000 to 213,000 per month) or below it. As of early April, this forecast implied employment growth for April 2004 through March 2005 of 3.8 million (2.9 percent). As

⁹ We could forecast GDP growth independently along with employment and productivity growth. However, we take the consensus forecast as given because we do not have an independent model of employment growth that would provide good rationale for a better alternative GDP growth forecast.

¹⁰ Because employment data are available monthly and productivity data are available quarterly, the actual employment data cross over into the first quarter of the forecast period. This overlap provides a benchmark with which to interpret the assumed productivity paths.

of early June, this forecast implied employment growth for this period of 5.4 million (4.1 percent). Both employment forecasts are well above most other employment forecasts.

On the other hand, if productivity growth continues on a 2.9 percent trend from its current level without any cyclical adjustment to the level, the forecast of employment change is very modest. Employment change would start around 150,000 per month and eventually fall below the Blue Chip range within a year. Total employment change for twelve months in this forecast would be 1.4 million (1.1 percent), just about enough to absorb an average year of labor force growth. If productivity were to continue to grow at the same remarkably high rate as it has achieved during the recovery, then the recovery would continue to be one with “job loss” at an increasing pace. In the unlikely event this occurred, we would be even more “at a loss” to explain the boom in productivity.

Actual employment change averaged 316,000 during March through May. This pace is about half way between the two scenarios with a 2.9 percent growth rate. Because GDP growth appears to be very close to its forecast, productivity growth likely slowed significantly in 2004:Q2 – closer to zero, but perhaps not actually declining.

Two relatively simple explanations can reconcile the employment and productivity data in 2004:H1. One is that productivity is reverting to trend, but the trend is higher than our estimate of 2.9 percent. In this case, productivity does not have to decline much, if at all, and thus employment will not increase as much as might be expected under the trend-reversion hypothesis. Given the uncertainty about trend productivity estimates and given that it is only very recently that we can accept the hypothesis of a higher trend rate, it seems risky to bank on even higher trend productivity growth. A second explanation is that the employment growth reflects a diminution, but not elimination, of uncertainty about the strength and stability of the current recovery. Resolution of uncertainty might be occurring partially across all firms, or disproportionately across some firms for which economic conditions have become clearer. In either case, if the resolution of uncertainty is only partial then productivity might remain relatively high and adjust to trend more slowly than we have assumed.

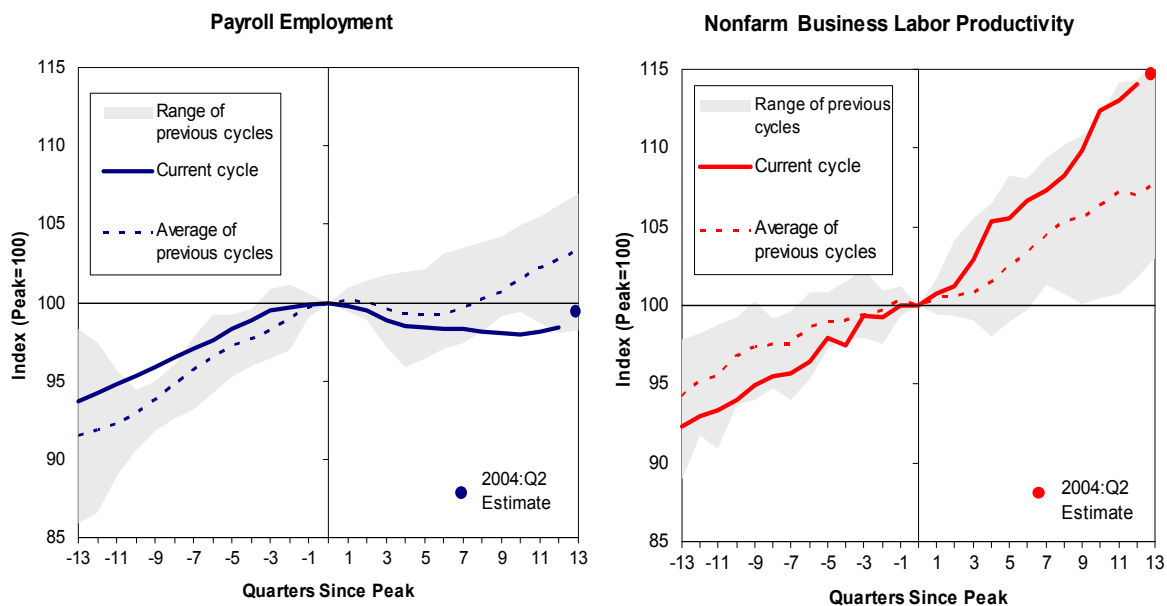
Box 5 summarizes this section of the brief. Recent gains in productivity occurred in all three components: higher trend productivity, higher cyclical productivity, and higher unexplained productivity. Higher trend productivity does not “explain” the “job loss” recovery. However, it does help us understand why relatively strong recent GDP growth has not had a greater impact on employment and unemployment – and why the employment forecast is so moderate. The relatively high level of unexplained productivity remains a puzzle; we have not understood it, nor has anyone else yet. We have offered modest evidence suggesting that uncertainty about economic recovery and growth may help explain a piece of the puzzle. Now it appears that the uncertainty may be dissipating. Finally, while we expect employment to grow more rapidly in 2004 than earlier in the recovery, the exact pace will depend on many critical and uncertain factors: How strong GDP growth is in 2004:H2; the actual trend productivity growth rate; and the path by which productivity reverts to its trend. If economic uncertainty continues to fade quickly and productivity exhibits some trend reversion, the long-awaited emerging recovery of employment may remain in a brisk “job gain” mode for the remainder of this year or so.

Box 1 Overview

- Evidence on productivity and employment
- Productivity decomposition and employment
 - Long-run trend part
 - Short-run cyclical, unexplained parts
- Interpretations of recent productivity surge
 - Labor costs and corporate profits
 - Unusual structural change
 - Uncertainty about the recovery
- Employment outlook
 - Alternative scenarios given consensus GDP forecast

Chart 1

In this recovery, employment is unusually low and productivity is unusually high but employment behavior has been more unusual.



Box 2 Components of Output Growth

Level: Output = (Output/Hour) x (Hours/Employee) x Employees

Growth: + 8.5% = + 9.9% - 0.6% - 0.7%
Approximate growth from recession trough to 2003:Q4
(Not exact because of rounding and data source differences)

Does high productivity “explain” low employment? No.

- *Productivity and employment move together in the long run*
- *Given demand, firms choose components in the short run*
- *This recovery, productivity was chosen to meet demand*
- *Question is: why productivity rather than other margins?*

Box 3 Components of Productivity Growth

Productivity = Trend + Cyclical + Unexplained

- **Trend:** long-run growth driven by accumulation of physical, human, and organizational capital.
- **Cyclical:** short-run temporary growth associated with changes in work intensity and job reallocation toward high productivity establishments in response to business cycle fluctuations.
- **Unexplained:** short-run temporary growth for reasons we cannot explain or identify

Chart 2

Estimating trend productivity is tricky. Our best estimates suggest a significant increase around 1997, but the magnitude and timing are still uncertain and heavily influenced by recent data.

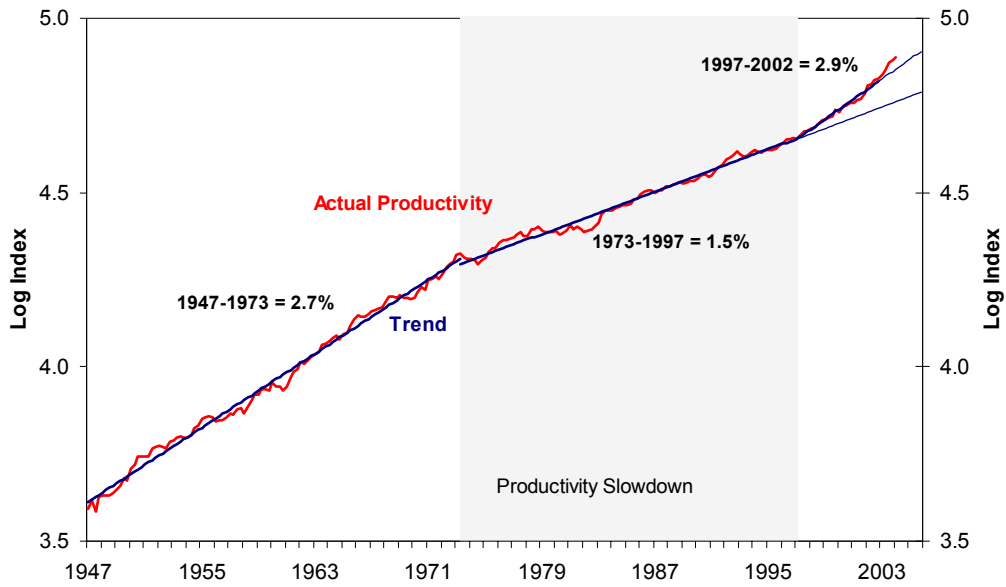


Chart 3

Higher trend productivity growth raises potential output growth so actual GDP must grow faster to reduce unemployment.

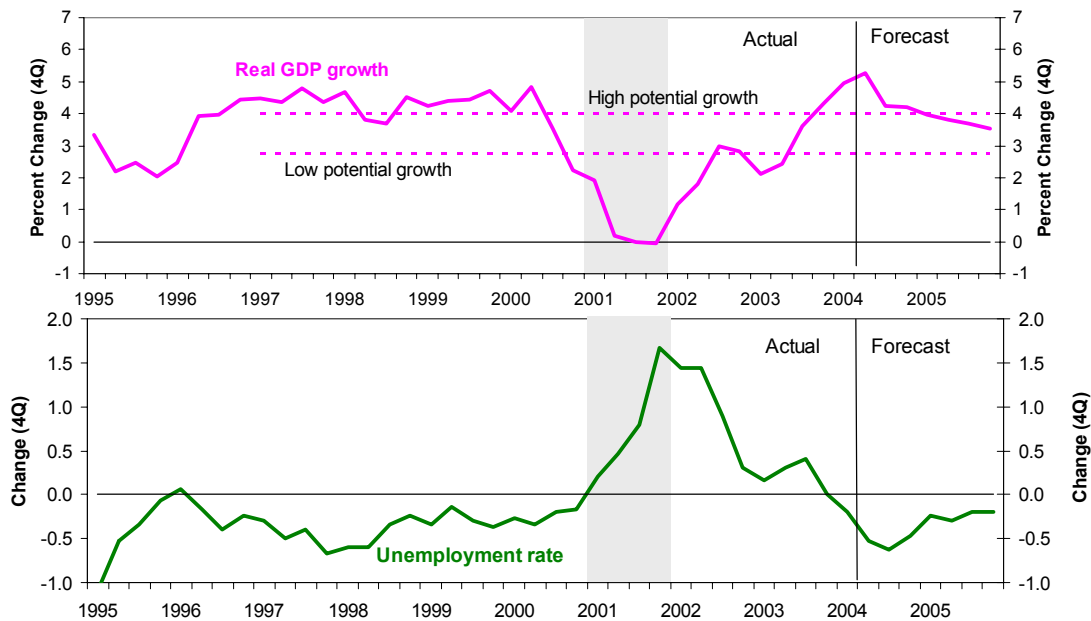
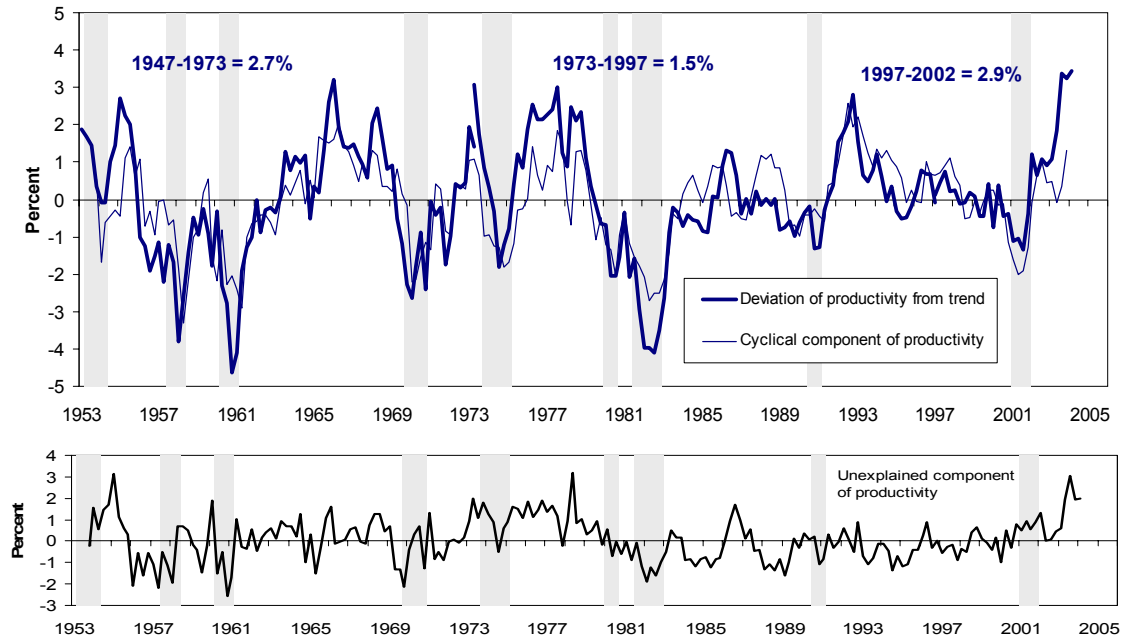


Chart 4

Higher trend productivity growth seems plausible, but the unexplained cyclical component has been high since the last peak.



Box 4

Interpreting Recent Productivity

- High labor costs and low profits? Probably not.
 - Some benefit components are surging
 - But total labor costs are relatively low
 - And profits are growing rapidly
- Unusual structural change? Probably not.
 - Job reallocation has been much lower than usual
- Uncertainty about the recovery? Maybe.
 - How much has trend productivity/potential GDP risen?
 - How much will fiscal policy stimulate growth?
 - Is geopolitical risk still high?

Chart 5

Productivity is growing faster than labor costs, and profits are surging, which would suggest firms would demand more labor.

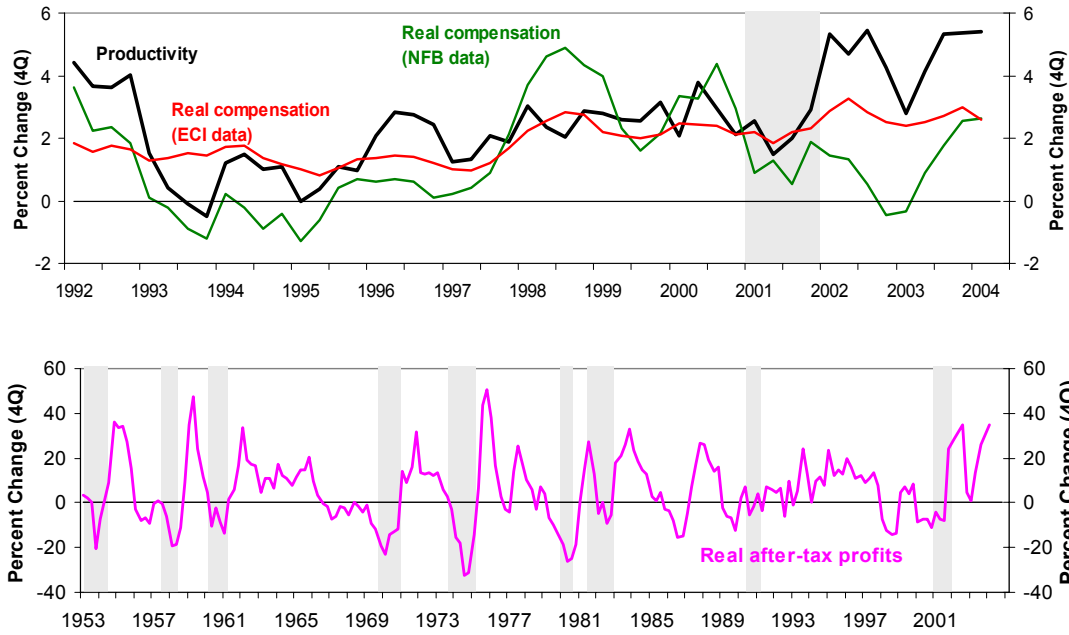


Chart 6

Insurance and retirement benefit costs have been rising fast, but they only account for about 12 percent of total compensation.

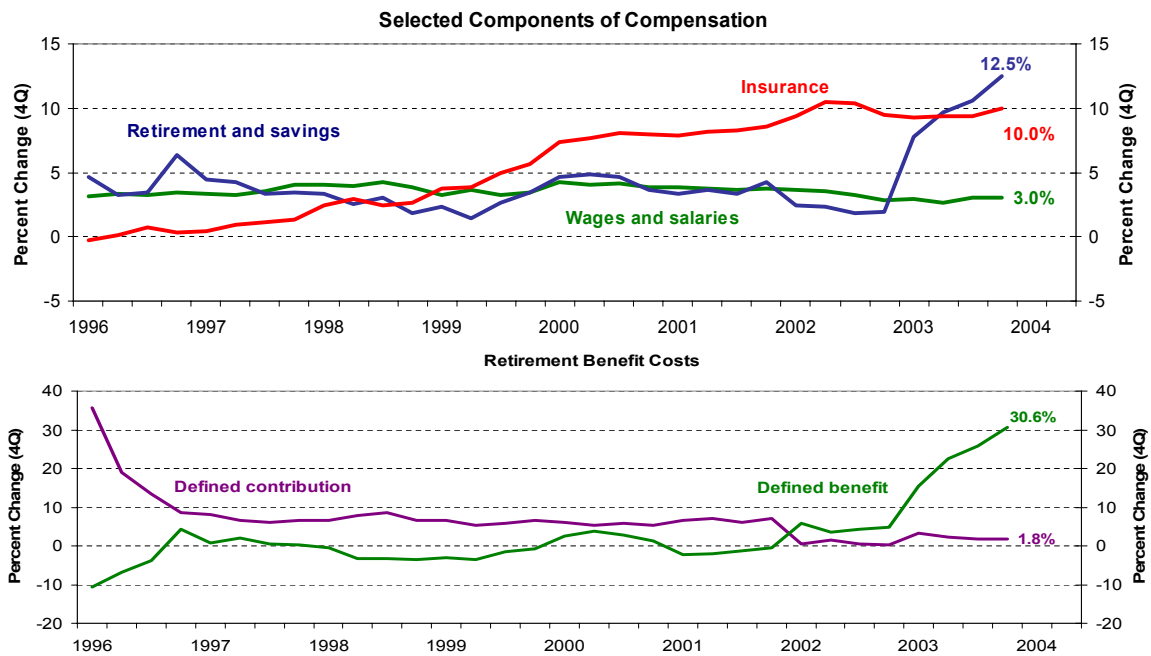
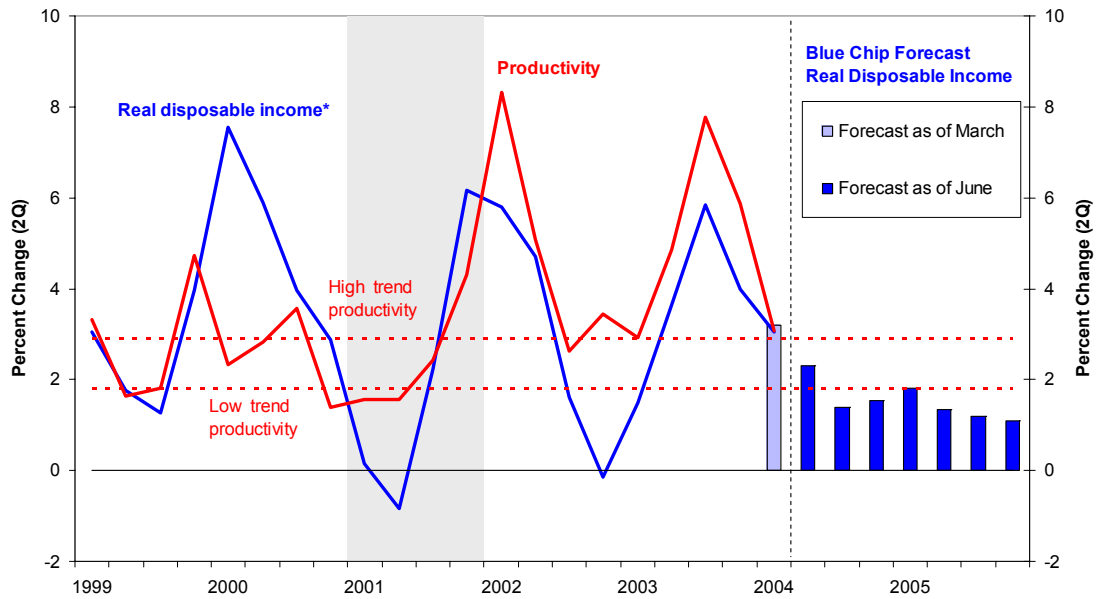


Chart 7

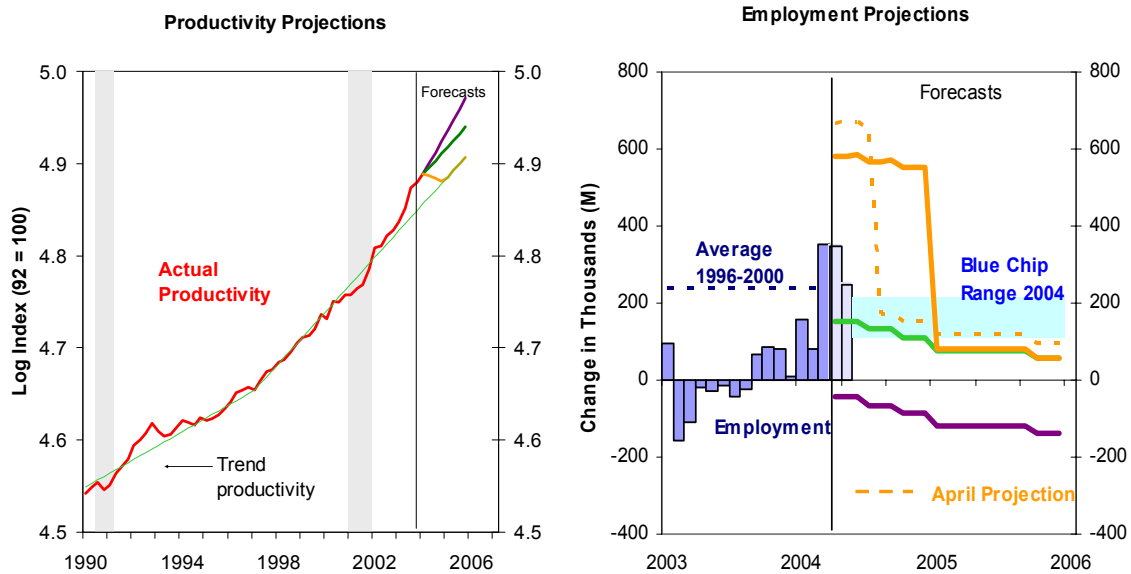
During this recovery, firms raised productivity much faster than trend primarily in periods when tax cuts stimulated consumer demand.



*Calculated with smoothed data on personal tax payments.

Chart 8

Given consensus GDP forecasts, employment growth will depend on how the current level of productivity adjusts to its trend.



Box 5 Summary

- Recent productivity gains reflect increases in the trend, cyclical, and unexplained parts
- Faster trend productivity means GDP must grow faster than it has to raise employment significantly
- The unexplained productivity surge remains a puzzle, but it may be related to uncertainty about the recovery
- Employment should continue to grow more rapidly in 2004, but the exact pace depends on the strength of final demand and how productivity adjusts